**GZA**
**GeoEnvironmental, Inc.**

*Engineers and*
*Scientists*

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Mr. Dan Keefe
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Boston, Massachusetts 02114

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Re: Sub-slab Soil Vapor Sampling, Analysis, and Evaluation Report
The Shoppes at Elmway Farms Project
Norwood, Massachusetts

Dear Mr. Keefe:

GZA GeoEnvironmental, Inc. (GZA) has prepared this letter report to document the results of the recent sub-slab soil vapor sampling and laboratory analysis work performed at the Shoppes at Elmway Farms site in Norwood, Massachusetts (the "Site"). Specifically, this work was performed to evaluate the presence and concentrations of Site-related chlorinated volatile organic compounds (CVOCs) in the soil gas and to assess their potential to migrate into the indoor air of the two recently constructed Site buildings (Retail A and Retail B). This work was performed by GZA in accordance with the Quality Assurance Project Plan (QAPP) that was prepared by GZA in May, 2009 and approved by the United States Environmental Protection Agency (EPA) Region 1.

In summary, though detectable levels of certain Site related compounds were identified in the soil vapor, the detected concentrations were sufficiently low that they do not present a condition of significant risk to even the most sensitive receptor that we evaluated (a future industrial/ commercial worker). Potential risks to other likely receptors (e.g., retail, recreational, educational or day care receptors) would be less significant and thus the detected concentrations should not affect the future uses of the buildings.

## BACKGROUND

The Site is located within the Norwood PCB Superfund Site (referred to as the "Superfund Site") in Norwood, Massachusetts, as defined by the 1989 Record of Decision (ROD), which was amended on May 17, 1996. The Superfund Site encompasses approximately 26 acres in an industrial/commercial area adjacent to a residential area. The Superfund Site extends north to Meadow Brook, east to U.S. Route 1 and the Dean Street Access Road, south to Dean Street, and west to Kerry Place, and includes the portion of Meadow Brook located between the former Hurley Property (the "Site Property") and the Dean Street Culvert. Volatile organic compounds, (VOCs) have been detected in groundwater at the Site.

As part of recent Site redevelopment activities, two retail buildings were constructed. Both buildings were constructed with a subslab vapor venting and barrier system in

accordance with the EPA-approved Redevelopment Work Plan and Supplement dated October 2006 and March 2008, respectively.

The venting system consists of 9 to 12 inches of crushed stone ventilation material placed over granular soils. Passive vapor collection piping consisting of perforated three (3) inch diameter polyvinyl chloride (PVC) piping was installed at specific locations within the crushed stone ventilation layer. The perforated PVC pipe connects to solid PVC vapor transmission piping that transitions up the inside face of the building walls and penetrates the roof of the buildings. The solid PVC vapor transmission pipes are capped with wind-driven turbine vent caps. The transmission lines are generally located at the east and west ends of Retail B and the north and south ends of Retail A. Refer to Figure 3 for the approximate location of vapor collection and transmission piping.

The vapor barrier system consists of a spray-applied membrane system installed by Terrafix, a licensed/certified Liquid Boot© contractor. This system includes a non-woven geosynthetic fabric placed over the crushed stone ventilation layer. The Liquid Boot barrier material was then spray applied at a minimum thickness of 60 mils over the non-woven fabric. Penetrations (utilities, pipes, column footings, etc) were sealed with additional Liquid Boot material during the installation. Following curing, quality control testing of the barrier including thickness checks and smoke testing (for holes) was performed. After testing and repairing the barrier as needed and placement of the sampling devices described below, a protective non-woven geotextile fabric was placed over the vapor barrier material followed by placement of the concrete floor slab which was poured and cured over the protective geotextile layer.

As shown on Figure 1 sub-slab soil vapor sampling/monitoring equipment was also installed during the ventilation and barrier system construction. Three sets of sampling devices were installed in Retail B and two were installed in Retail A. Each set includes a sampling point from within the stone ventilation layer (sample point B2) as well as a sampling point between the concrete floor slab and the barrier layer (sample point A1). The A1 sampling points were overlain with another layer of geosynthetic fabric and Liquid Boot so that these sampling points were sealed within a cell. As shown on Figure 1, each sampling location consists of separate ¾-inch diameter, threaded fitting PVC piping that extends from the sampling point to the exterior of the buildings for sampling (referred to as the sampling location). These dual sampling points were intended to provide the ability to sample soil vapors from within the crushed stone ventilation layer beneath the vapor barrier (sample point B2) as well as to assess whether VOCs may have penetrated the barrier layer and be potentially migrating into the buildings (sample point A1).

It should be noted that the sampling locations are the physical extensions outside of the building from which the samples are collected. The actual sampling points are located below the building slab inside the building footprint and are accessed by the pipes that extend from the sampling points to the sampling locations.

The work described below was performed in accordance with the procedures describedin the May 2009 Norwood PCB Superfund Site Redevelopment – Subslab

Sampling Quality Assurance Project Plan (the "QAPP") approved by EPA in June, 2009.

## PHYSICAL EVALUATION OF SAMPLING LOCATIONS

GZA performed physical evaluation of the five (5) exterior sampling locations on June 16, 2009. Evaluation work included removal of protective casing/roadbox covers and observation of the sampling pipes in the protective casings.

Retail A Sampling Locations

GZA observed that sampling location Retail A South A1 and B2 consisted of two 3/4 – inch diameter PVC pipes with smooth push on caps that entered horizontally into the protective roadbox which was set in cement flush with the pavement. The caps, labeled A and B, were removed and no condensation or water was observed. The caps were replaced and the roadbox resealed.

At sampling location Retail A North A1 and B2, GZA observed that the roadbox had not been set in cement and was easily removed from around the sampling pipes. GZA observed two 3/4- inch diameter PVC pipes with smooth push on caps that entered the protective roadbox vertically. The pipe caps were labeled A and B. In attempting to remove the caps, an approximately 1-foot long vertical section of PVC pipe was pulled out of the ground indicating a break in the pipes or some other issue. The pipes were replaced in the holes and the protective roadbox replaced pending future investigation.

Retail B Sampling Locations

GZA observed that sampling location Retail B Northwest A1 and B2 consisted of two 3/4 –inch diameter PVC pipes with smooth push on caps that extended horizontally into a wall box (also oriented horizontally) embedded into the building wall. The caps, labeled A and B, were removed and condensation (water) was observed. The water was allowed to drain and then the caps were replaced and the wall box resealed.

At sampling location Retail B North Middle A1 and B2 and Retail B Northeast A1 and B2, GZA observed that the roadboxes at each location had been set in cement flush with the pavement. The covers were removed to observe the sampling pipes. GZA observed two 3/4- inch diameter PVC pipes at both locations with smooth push on caps. The pipe caps were labeled A and B at both locations. The pipes entered the roadboxes horizontally but then turned vertically inside the roadboxes. The pipes at location Retail B Northeast A and B appeared to have been damaged and repaired using solvent-glued 90-degree PVC elbows. The caps were removed and water was visible within the pipes. The protective roadbox covers were replaced pending future investigation.

**SAMPLING EQUIPMENT ASSEMBLY**

From June 23 to June 29, 2009, GZA made several visits to the Site to further evaluate the sampling locations and assemble sampling apparatus for each of the locations. This included exposing subsurface lines at sample location Retail A North A and B. At this location, GZA observed that the vertical sections of the pipe and the 90-degree elbow fittings had been damaged prior to our evaluation. GZA cut the horizontal ends of the pipes using a hand saw and fitted the pipes with smooth push-on caps. The pipes were left exposed pending sampling work.

In general, the final sampling apparatus consisted of the following materials and equipment which varied slightly for the A and B sampling pipes as described below. Note that the apparatus at Retail B Northeast B2 was specifically modified due to the observed damage. This modification is also described below.

Sampling Apparatus for Pipe B2 Sample Locations

The sampling apparatus for B2 sample locations consisted of a smooth/push-on PVC ¾-inch inside diameter straight coupling that transitioned to a ¾-inch threaded female connection. At locations Retail B Northwest and Retail A South, the coupling was smooth to threaded ¾-inch diameter elbow instead of a straight coupling. A ¾-inch threaded nylon fitting that transitioned to a 1/2-inch barbed fitting was screwed into the PVC coupling and sealed using Teflon tape. An approximately 12 to 18-inch long section of 1/2-inch diameter HDPE tubing was then pushed onto the nylon barb and secured with a hose clamp. The other end of the tubing was pushed onto a 1/2-inch diameter threaded connection on a stainless steel butterfly valve. The tube and thread connection was secured using Teflon tape on the threads and a hose clamp over the tubing. A brass ½-inch threaded to ¼-inch barb fitting was screwed into the other end of the valve.

Due to damage observed at location Retail B Northeast B2, the smooth to threaded PVC coupling could not be used directly on the sampling pipe. At this location, an approximately 12-inch long section of 1-inch inside diameter polyethylene tubing was pushed over the 90-degree fitting at the end of the sampling pipe and secured in place using a hose clamp. The other end of the 1-inch tubing was pushed over the smooth portion of a PVC ¾-inch inside diameter coupling that transitioned to a ¾-inch threaded female connection. The sampling apparatus from the threaded connection onward was the same as described above.

Sampling Apparatus for Pipe A1 Sample Locations

The sampling apparatus for the A1 locations was the same as for the B2 locations from the connection to the pipe up to the other end of the HDPE tubing. At that point a PVC T-fitting (three female threaded connections) was installed. One end was fitted with a threaded male section which was pushed into the HDPE tubing and sealed with Teflon tape (over the threads) and a hose clamp (over the tubing). The horizontal end of the T-

fitting was connected to a stainless steel butterfly valve fitted with the barbed brass fitting described above. A 3 to 4 foot length of ¼-inch diameter HDPE tubing was connected to the barb. This length of tubing was extended to the vacuum pump for purging and sampling. The vertical end of the T-fitting was fitted directly with a brass barb. One end of another approximately 3-foot long section of ¼-inch HDPE tubing was pushed over the barb. The other end of the ¼-inch tubing was connected to a vacuum gage with a range of 0 to 2 inches of water vacuum in 0.02 increments. The purpose of the vacuum gage was to measure the vacuum pressure in the sampling pipe during and after sampling.

**INITIAL VACUUM TEST**

On June 30, 2009, GZA mobilized to the Site with the sampling apparati described above. In addition, a peristaltic pump and a Sensidyne Gillian Air Con-2 Sampler vacuum pump were brought to the Site to remove condensate and measure vacuum pressure, if any, in the sampling pipes. Condensate removal consisted of threading a length of ¼-inch HDPE tubing from the pump into each sampling line and running the pump until no water was observed being removed. Water was removed from all sampling pipe except those associated with Retail A South A and B. Condensate was not observed at this sampling location during the work. Vacuum testing was performed at each sampling location to confirm that A1 locations were the sealed locations (i.e., could hold a vacuum) and that Pipe B2 locations were not constricted or blocked (i.e., could not hold a vacuum). During this work, the push-on ¾-inch PVC fittings were sealed using vegetable shortening (Crisco). The data collected from this work is summarized in Table 1.

In summary, GZA observed that at the A1 sample locations, except Retail B Northeast A1, a vacuum pressure was measured and held, with some pressure loss observed, after closing the butterfly valve on the sampling apparatus. At the B2 sample locations, minimal vacuum pressure was developed when the vacuum pump was applied and the system did not hold a vacuum when the valve was closed. Based on these observations, it is GZA's opinion that with the exception of the Retail B Northeast sampling point, the seal on the A1 sampling lines into the sampling cell is adequate while the B sampling lines are unconstricted. In addition, it appears that the damage to the Retail B Northeast A1 and B2 sampling pipes may have been more extensive than what appears to have been repaired at the sampling location within the protective casing.

**SAMPLE COLLECTION**

Sample collection was performed in general accordance with the procedures described in the QAPP. On July 1, 2009 GZA commenced and completed 8-hour sample collection at the 10 sample locations. At each location, a Summa canister was used to collect the sample. The sample collection procedures are described below. GZA commenced sample collection at Retail B Northwest A and B and progressed eastward and southward ending with location Retail A South A and B. The ambient air sample was located on the north side of the access road behind Retail B.

B2 Sampling Procedures

At the B2 sample locations the following procedures were performed.

1. Remove the cap and inspect the pipe for dirt/moisture. Clean with a dry cloth as necessary.
2. Place a continuous bead of vegetable shortening around the sample pipe and connect/push-on the sampling apparatus. Check that the valve is in the closed position.
3. Connect a ¾-inch diameter tube from the brass barbed fitting to the Sensidyne Gillian Air Con-2 Sampler vacuum pump.
4. Turn on the vacuum pump to a flow of 20 to 25 liters per minute and open the valve on the sampling apparatus.
5. Run the vacuum pump for the length of time necessary to purge 5 pipe volumes from the sampling pipe.
6. After purging, turn the valve into the closed position and turn off and disconnect the vacuum pump.
7. Connect the Summa canister (with vacuum gage) to the HDPE tubing and record the starting pressure in the canister and the time of the start of the sample collection.
8. Open the Summa canister and the valve simultaneously and commence sample collection. Allow collection to occur for 8 hours.
9. Return to the canister and turn off the canister valve. Record the ending vacuum pressure in the canister and package for shipment to the testing laboratory.

A1 Sampling Procedures

At the A1 locations, steps 1, 2, 3, 4, 7 and 8 are the same as for the B2 sampling locations. The sampling procedures were modified for steps 5, 6, and 9 as described below.

5. Run the vacuum pump for the length of time necessary to purge 1 pipe volume from the sampling pipes and record the vacuum from the sampling apparatus vacuum gage at the end of the this period.
6. Close the valve on the sampling apparatus and observe and record the vacuum pressure. Disconnect the vacuum pump from the sampling apparatus.
9. Return to the canister and turn off the canister valve. Record the ending vacuum pressure in the canister and at the sampling apparatus and package for shipment to the testing laboratory.

The ambient air Summa canister sample was collected through an approximately 3-foot length of ¼-inch diameter HDPE tubing at the locations shown on the Figure. No other materials were used for this sample.

The QAPP specified that Summa canisters should have a minimum vacuum at the end of sampling greater than or equal to 6 in Hg in vacuum. Actual recorded vacuum pressures ranged from 5 in Hg to less than 1 in Hg (readings between 0 and 1 in Hg were recorded at three locations at the completion of the sampling work.)

Although the vacuum readings on the canisters were below the specified vacuum pressure for the end of the sampling period, a vacuum pressure was measured at all of the canisters indicating that the canisters were still collecting sample from the sampling pipe[1]. Refer to Table 2 for the actual observed vacuum pressures within the vacuum canisters at the end of sampling. The analytical laboratory (Alpha) indicates that end of sampling vacuums lower than 6 mmHg are common and the results should be considered biased towards the earlier portion of the sampling period (i.e., more soil vapor would be drawn initially when the vacuum in the canister was high and less towards the end of sampling when the vacuums were low.) This bias in the results should not adversely affect the quality of the data for the purpose of this report.

The samples collected, including the prepared sample provided by EPA, were transported under chain of custody to Alpha Analytical Laboratories (Alpha) in Mansfield, Massachusetts for TO-15 analysis.

## ANALYTICAL RESULTS

Laboratory testing data for the 10 samples collected indicated detections of numerous volatile organic compounds at varying concentrations. The contaminants of potential concern (COPC), based on the detection of these compounds within groundwater at the Site, are listed below with the threshold criteria established in the QAPP at which, if exceeded, additional evaluation of the data would be required. Also presented is an indication of whether the compound was detected in the samples collected during this program.

| COPC | Threshold Criteria | Detect/Not Detected |
|---|---|---|
| 1,2,4-trichlorobenzene | 270 ppbV | Not Detected |
| 1,4-dichlorobenzene | 1300ppbV | Not Detected |
| cis-1,2-dichloroethene | No Threshold | Not Detected |
| tetrachloroethene | 12 ppbV | Not Detected |
| trans-1,2-dichloroethene | No Threshold | Not Detected |
| trichloroethene | 0.41 ppbV | Detected |
| vinyl chloride | 11 ppbV | Detected |

Concentrations of vinyl chloride were not measured above the threshold criterion for that compound. Concentrations of trichloroethene (TCE) were detected above the threshold criterion at each of the locations sampled except Retail B Northeast A and B. Further discussion regarding this sample is provided below.

[1] Vacuum pressures observed as between <-1 and 0) in Hg were recorded based on visual observation of the vacuum gauge needle on the canister being above 0 in Hg but below the -1 in Hg increment.

Of particular note is the fact that the detected concentrations of TCE were consistently higher in the A1 or sealed cell samples than in the B2 samples. This is counterintuitive. If the TCE in both samples was emanating from the groundwater, the concentrations in the A1 samples would be expected to be no more than the concentrations in the B2 samples due to the greater distance to the groundwater and the presence of the intervening barrier. We attribute the higher concentrations in the A1 samples to chemicals (including TCE; which we understand is used in the manufacture of PVC[2]) emanating from the pipe[3]. Since the A1 sampling points are within a closed cell and are therefore not readily vented, chemicals that emanate from the pipe would tend to buildup. Since the B2 sampling points are an "open system" any chemicals that would emanate from the pipe in those samples would tend to vent out of the pipe. This effect is exacerbated by the purging limitations for the A1 samples. Since the A1 samples were from a closed cell, we were only able to purge one pipe volume prior to sampling, while we purged five pipe volumes for the B2 samples.

While we believe that the concentrations of TCE detected in the A1 samples are likely attributable to TCE emanating from the pipe and not from the environment, we have conservatively incorporated these concentrations in the risk characterization. It should be noted that, even though we purged five pipe volumes in collecting the B2 samples, some of the concentration of TCE detected in the B2 samples may also be attributable to TCE emanating from the pipe and not due to TCE in the subsurface.

We have eliminated from our analysis the results for the two samples collected from the Retail B Northeast location. As indicated above, it was apparent that repairs had been performed at this location using PVC cement. PVC cement typically contains significant amounts of tetrahydrofuran (THF) and 2-butanone - both of which were detected in these samples at very high concentrations. Given the elevated concentrations of THF and 2-butanone in these samples, the detection limit for the other analytes (including TCE) were sufficiently elevated that the results were not meaningful. Beyond this, the fact that we were unable to hold a vacuum for the Retail B Northeast A1 sample indicates that there is unrepaired further damage to this pipe.

The test results for the ambient air sample indicated measurements of TCE and tetrachloroethene above the detection limits, but below the threshold criteria.

The final sample analyzed consisted of a spiked summa canister sample provided by EPA. Based on review of the data by EPA, the test results were consistent with the contaminant spike introduced to the canister.

Refer to Table 3 for a summary of sample test results. Refer to Appendix A for the laboratory reports.

[2] http://www.hsia.org/white_papers/tri%20wp.htm
[3] It should be noted that several other chemicals associated with the manufacture of PVC (notably vinyl chloride and cyclohexane) were also detected in the A1 samples but not the B2 samples.

## RISK CHARACTERIZATION

As described in the QAPP, the detection of TCE at concentrations above the threshold criterion required further assessment. As discussed with EPA, MassDEP, and DDR, GZA has performed a risk characterization using the concentrations of the COPCs that were detected in the A1 and B2 samples in this analysis[4]. The risk characterization and results are summarized below. Refer to Appendix B for the full risk characterization report.

GZA conducted the risk characterization in accordance with the requirements of the United States Environmental Protection Agency (USEPA) guidance document titled "Risk Assessment Guidance for Superfund" (RAGS), and the relevant documents in this series, including the supplemental RAGS. In addition, the Massachusetts Department of Environmental Protection (MassDEP) guidance (MassDEP, 2008) was consulted in completing the risk characterization.

The cancer risks and non-cancer hazard indices based on the reasonable maximum exposure (RME) scenario for commercial/industrial workers and other Site users[5] with exposure to indoor air potentially impacted by vapor intrusion at the Site are within the USEPA non-cancer hazard target limit of 1 and the cancer target risk range of $10^{-6}$ ~ $10^{-4}$. Therefore, the residual concentrations of contaminants in Site groundwater pose no significant risks to potential human receptors due to vapor inhalation. Therefore, it is concluded that the COPCs in Site soil gas are not expected to pose significant risks to potential human receptors by entering the building and impacting indoor air via vapor intrusion.

## SAMPLING AND LABORATORY QUALITY CONTROL ASSESSMENT

As described above, GZA collected the samples in general accordance with the QAPP approved by EPA. Although the final vacuum within the sample containers as recorded on-Site at the completion of sampling was below the QAPP criterion of 6-inches of Hg, a vacuum was present and observed at each sample container at the completion of sampling. As indicated above, the lower end of sampling vacuums will result in a bias in the sampling towards the earlier portion of the sampling period. This bias is not considered to significantly affect the conclusions of the risk characterization.

The laboratory reports for the analyses performed are attached to this report as required by the QAPP. The laboratory report has been reviewed by the analytical laboratory and the data has been determined to be valid. Further discussion on the acceptability and validity of the data is included below.

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[4] Since there is an intervening barrier above these sampling points, these concentrations likely substantially overestimate the concentrations that are immediately beneath the slab and would therefore have the potential to migrate into the buildings' indoor air.

[5] Other potential Site users under future hypothetical Site uses including Site visitors/customers, day care children and workers, fitness club members and workers, and other recreational users of the Site would be no more exposed than the evaluated receptor (commercial/ industrial worker), thus risks to these receptors would also be within the EPA's target risk range.

## LABORATORY DATA VALIDATION

As described in the QAPP, Project personnel have reviewed the data in accordance with the "Region I, EPA-NE Data Validation Functional Guidelines For Evaluating Environmental Analyses, 7/96," Tier 1 guidelines. The laboratory data review was conducted in accordance with the QA Manual attached as Appendix D.4 within the QAPP and the laboratory has prepared the Data Package which includes the following information:

a) GZA Project Name and Number
b) Sample Identification Summaries
c) Individual Sample Results
d) Surrogate Data for each Sample
e) Summary Narrative Page with sample receipt observations, field communications, and quality control deviations.
f) Method Blank Analytical Results
g) Laboratory Control Sample Results
h) Matrix Spike / Matrix Spike Duplicate Analyses Results
i) Chain-of-Custody

GZA Project Staff confirmed that the laboratory data packages are complete.

GZA has reviewed the laboratory report narratives for the samples collected and has summarized below information provided within the laboratory report that qualifies the analytical results for the COPCs at the Site.

1. Samples L0908991-01(Retail B Northwest-A1), L0908991-03 (Retail B North mid-A1), L0908991-04 (Retail Northmid-B2), L098989-01 (Retail A South A1), L098989-02 (Retail A South B2), and WG370013-5 have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample. However, these elevated detection limits for non-detected analytes are still below the threshold criteria established in the QAPP for the COPCs and thus the data are considered usable for this analysis.

2. Samples L0908991-01, L0908991-03, L0908991-04 (Retail B Northmid-B2), and L0908991-07 (Retail A North-A1), L0908989-01 (Retail A South-A1) and WG370013-5 (LCS) results indicate that the presence of acetone could not be determined in the samples due to non-target compounds interfering with the identification and quantification of this compound. Acetone is not a COPC.

3. Samples L0908991-05 (Retail B Northeast-A1) and L0908991-06 (Retail B Northeast-B2) have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample. As indicated above, these samples were not considered in the risk characterization due to the elevated detection limits.

4. WG370013-3 Laboratory Control Sample (LCS) recovery for 1,2-Dichloroethane (134%) is outside the 70% to 130% acceptance limit. The LCS was within overall method allowances, therefore the analysis proceeded.

GZA has reviewed the surrogates and laboratory control sample results which indicate that the laboratory criteria have been achieved and, unless noted above, there is no bias associated with the data.

GZA has reviewed the method blank data for contamination and bias and observed that none was reported.

Please refer to the attached laboratory analytical report for analytical testing results and more detailed information regarding laboratory quality control.

**DATA USABILITY**

The sample analytical results have been evaluated to assess whether they meet the precision and accuracy criteria specified in QAPP.

As part of our assessment of the usability of the data, GZA reviewed the following information relative to the usability requirements included in the QAPP.

a) GZA has reviewed the laboratory report and the pertinent duplicate and LCS recovery and RPD data for the project (measuring accuracy and precision) have been included.
b) GZA has reviewed the LCS test results and, excepting the qualifications for LCSs described above, the laboratory data meets the parameters for accuracy as described in the QAPP.
c) GZA has reviewed the laboratory Reporting Limits (RLs) versus the stated limits in Section 7 of the QAPP (Sensitivity) and the RLs are in agreement with the QAPP except where dilution requirements, as identified above, significantly impacted the RLs.

Based on GZA's evaluation of the laboratory analytical test data and quality control report, and with the exceptions noted above, we conclude that the analytical data used in the risk characterization is representative, complete, and meets the sensitivity criteria established in the QAPP.

**CONCLUSIONS**

Based on the results of the analyses performed on the vapor samples collected and the risk characterization work described above, there is no significant risk to employees and users of the buildings due to vapor migration and therefore, proposed future uses of the buildings for commercial/industrial, retail, educational, day care or recreational should not be restricted.

Please feel free to contact either Matthew Smith at 781-278-5789 or Al Ricciardelli at 781-278-3831with any questions concerning this information.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Matthew Smith, P.E.
Senior Project Manager

Chunhua Liu, PhD
Consultant Reviewer

Albert J. Ricciardelli, P.E., LSP
Senior Principal

Attachment: Figure 1- Sampling Locations Plan
Table 1 - Data Collected During Field Evaluation
Table 2- Data Collected During Sampling
Table 3- Summary of Analytical Testing Data
Appendix A- Soil Vapor Laboratory Test Data
Appendix B- Risk Characterization

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RESTAURANT PAD B

RESTAURANT PAD A

RETAIL B (PAD 1)
1 STORY
FFE=59.0

RETAIL B (PAD 2)
1 STORY
FFE=58.33
LL ROOM

RETAIL B (PAD 3)
1 STORY
FFE=57.66

3" DIAMETER SOLID SCH 40 PVC HEADER PIPE IN CEILING. (TYP)

RETAIL B NORTHWEST A1 AND B2

RETAIL B NORTH MIDDLE A1 AND B2

RETAIL B NORTHEAST A1 AND B2

10'

RETAIL A (PAD 2)
1 STORY
FFE=58.0
LL ROOM

RETAIL A (PAD 1)
1 STORY
FFE=56.67

3" DIAMETER SOLID SCH 40 PVC HEADER PIPE IN CEILING. (TYP)

RETAIL A SOUTH A1 AND B2

RETAIL A NORTH A1 AND B2

APPROXIMATE LOCATION OF AMBIENT AIR SAMPLE COLLECTION

Z

Z

DOCK

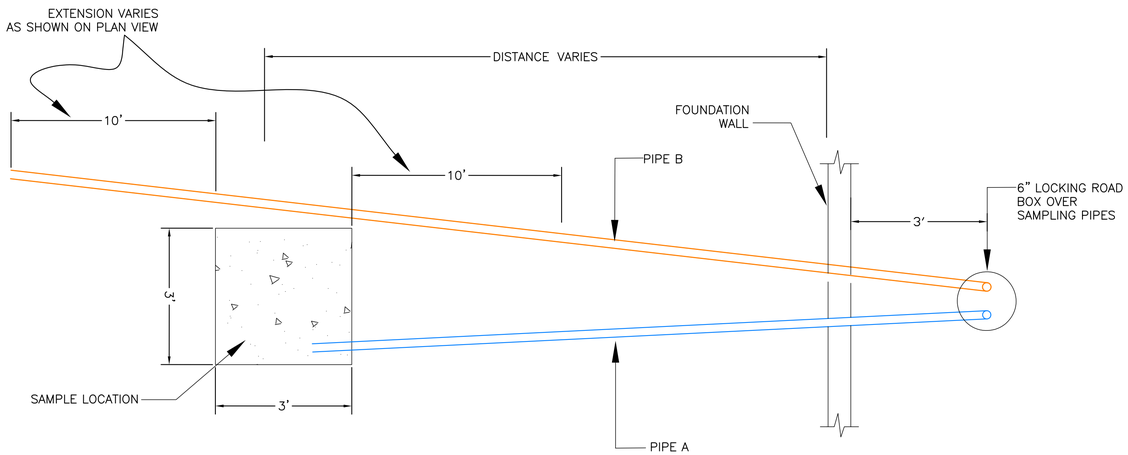
LEGEND

PROPOSED SUBSLAB VAPOR SAMPLING LOCATION; NOT TO SCALE (ACTUAL SIZE = 3'X3')

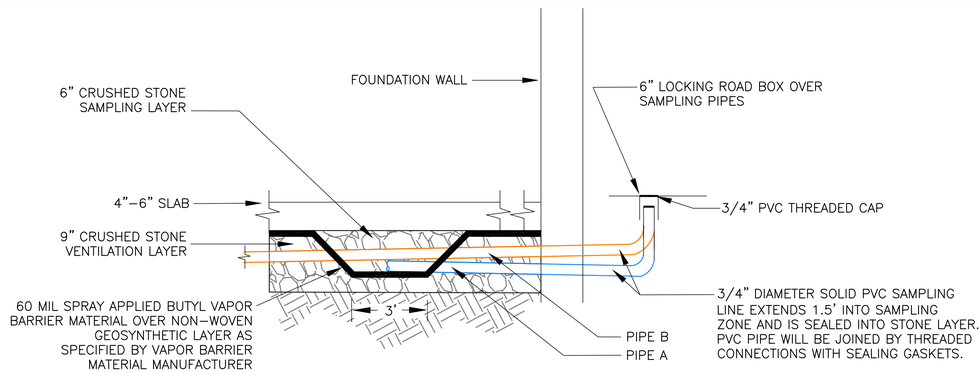
3" DIAMETER SOLID SCH 40 PVC PIPE IN CEILING

0 25' 50' 100' 200'

NOTE: SAMPLES COLLECTED AT THE LOCATIONS IDENTIFIED ON JULY 1, 2009. THE BLUE LINES INDICATE SAMPLING LOCATIONS FOR PIPES A1 AND THE ORANGE LINES INDICATE SAMPLING LOCATIONS FOR PIPES B2.




TYPICAL PLAN VIEW
NOT TO SCALE




NOTES:
- PIPE A WILL BE AT .2% DOWN ANGLE FROM SAMPLE LOCATION.
- PIPE B WILL BE AT .2% UP ANGLE FROM SAMPLE LOCATION

SUB SLAB VAPOR SAMPLING LOCATION
NOT TO SCALE

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GZA
GeoEnvironmental, Inc.
Engineers and Scientists
ONE EDGEWATER DRIVE
NORWOOD, MA 02062


PROJ MGR: MMS
DESIGNED BY: MMS
REVIEWED BY: AJR
OPERATOR: GAS/EMD/LW/OCO
CHECKER: PFS
DATE: 02-24-2010

SHOPPES AT ELMAWAY FARMS PROJECT
NORWOOD, MASSACHUSETTS

SUBSLAB VAPOR SAMPLING LOCATIONS

PROJECT NO.
16356.85

FIGURE NO.
1

**Table 1- Data Collected During Field Evaluation Work**

**Soil Vapor Sampling Documentation Log**
**Shoppes At Elmway Farms Site**
**Norwood, MA**

| Date | Sample Location | Pipe Sample ID | Time of Vacuum Test Start | Time of Vacuum Test Finish | Max Vacuum During Test (in H20) | Vacuum at End of Test (in H2O) | Comments/Description of Activities |
|---|---|---|---|---|---|---|---|
| 6/30/2009 | Retail B | Pipe A1 | 1015 | 1016 | >2 | 0.4 | |
| 6/30/2009 | Northwest | Pipe B2 | 1018 | 1028 | 0.05 | 0 | |
| 6/30/2009 | Retail B | Pipe A1 | 1040 | 1041 | >2 | 0.4 | |
| 6/30/2009 | North Middle | Pipe B2 | 1045 | 1055 | 0.05 | 0 | |
| 6/30/2009 | Retail B | Pipe A1 | 1110 | 1115 | 0.05 | 0 | No Vacuum Held, appears damaged |
| 6/30/2009 | Northeast | Pipe B2 | 1120 | 1130 | 0.05 | 0 | |
| 6/30/2009 | Retail A | Pipe A1 | 1230 | 1231 | >2 | 0.8 | |
| 6/30/2009 | North | Pipe B2 | 1240 | 1250 | 0.05 | 0 | |
| 6/30/2009 | Retail A | Pipe A1 | 1305 | 1306 | >2 | 0.5 | |
| 6/30/2009 | South | Pipe B2 | 1315 | 1325 | 0.05 | 0 | |
| | | | | | | | |

| Ambient Conditions During Field Evaluation Work | |
|---|---|
| | |
| Temperature | 75 |
| Barometric Pressure | 30 |
| Weather | Partly Cloudy |

**TABLE 2- DATA COLLECTED DURING SAMPLING**

**Soil Vapor Sampling Documentation Log**
**Shoppes At Elmway Farms Site**
**Norwood, MA**

| Date | Sample Location | Pipe Sample ID | Canister ID | Guage ID | Time of Purge Start | Time of Purge End | Vacuum at End of Purge (in H2O) | Vacuum on Canister Gauge at End of Purge (in Mercury) | Time of Sample Start | Time of Sample End | Vacuum at End of Sample (in H20) | Vacuum on Canister Gauge at End of Sample (in Mercury) | Laboratory Reported Vac. Pressure (in Hg) | Accepted Range (in (hg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/1/2009 | Retail B | Pipe A1 | 398 | 120 | 741 | 742 | 0.3 | 29.2 | 743 | 1545 | 0.2 | -1 | -0.5 | +/- 4 |
| 7/1/2009 | Northwest | Pipe B2 | 138 | 4 | 732 | 736 | | 28.9 | 740 | 1545 | | -3 | -2.4 | +/- 4 |
| 7/1/2009 | Retail B | Pipe A1 | 139 | 131 | 758 | 759 | 0.41 | 30+ | 759 | 1600 | 0.05 | -5 | -1.2 | +/- 4 |
| 7/1/2009 | North Middle | Pipe B2 | 336 | 122 | 751 | 756 | | 30 | 756 | 1600 | | -2.5 | -1.3 | +/- 4 |
| 7/1/2009 | Retail B | Pipe A1 | 225 | 336 | 824 | 825 | 0 | 30+ | 825 | 1625 | 0 | <-1 and >0 | 0.4 | +/- 4 |
| 7/1/2009 | Northeast | Pipe B2 | 237 | 434 | 818 | 821 | | 29.5 | 821 | 1625 | | -2.5 | -2.5 | +/- 4 |
| | | | | | | | | | | | | See Note 1 | | |
| 7/1/2009 | Retail A | Pipe A1 | 449 | 435 | 839 | 840 | 0.75 | 30 | 840 | 1640 | 0.02 | <-1 and >0 | 0.3 | +/- 4 |
| 7/1/2009 | North | Pipe B2 | 518 | 324 | 833 | 836 | | 27.9 | 836 | 1640 | | <-1 and >0 | 0.1 | +/- 4 |
| | | | | | | | | | | | | See Note 1 | | |
| 7/1/2009 | Retail A | Pipe A1 | 323 | 147 | 904 | 905 | 0.4 | 29.5 | 905 | 1705 | 0.02 | -2 | -1.7 | +/- 4 |
| 7/1/2009 | South | Pipe B2 | 148 | - | 900 | 903 | | 30 | 904 | 1705 | | -1.5 | -0.7 | +/- 4 |
| 7/1/2009 | North of Building B | Ambient | 529 | 309 | NA | NA | NA | 30+ | 847 | 1647 | NA | -5 | -1.1 | +/- 4 |

Note 1: Vacuum pressures observed as between <-1 and 0) in Hg were recorded based on visual observation of the vacuum gauge needle on the canister being above 0 in Hg but below the 1 in Hg increment.
Note 2: NA refers to "Not Applicable" for the canister sampling ambient air.

| Ambient Conditions During Sampling | | |
|---|---|---|
| | Start of Sampling | End of Sampling |
| Temperature | 60 | 63 |
| Barometric Pressure | 29.8 | 29.8 |
| Weather | Overcast | Rain |

**Table 3- Summary of Vapor Testing Laboratory Analytical Results**
Shoppes at Elmway Farms Project
Norwood, Massachusetts

File No. 16356.85
September, 2009

| | | Retail B Northwest A1 L0908991-1 07/01/2009 | | Retail B Northwest B2 L0908991-2 07/01/2009 | | Retail B Northmid A1 L0908991-3 07/01/2009 | | Retail B Northmid B2 L0908991-4 07/01/2009 | | Retail B Northeast A1 L0908991-5 07/01/2009 | | Retail B Northeast B2 L0908991-6 07/01/2009 | | Retail A North A1 L0908991-7 07/01/2009 | | Retail A North B2 L0908991-8 07/01/2009 | | Retail A South A1 L0908989-1 07/01/2009 | | Retail A South B2 L0908989-2 07/01/2009 | | Ambient L0908989-3 07/01/2009 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Result | RL | Result | RL | Result | RL | Result | RL | Result | RL | Result | RL | Result | RL | Result | RL | Result | RL | Result | RL | Result | RL |
| VOLATILE ORGANICS | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,1,1,2-Tetrachloroethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,1,2-Trichloroethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,1-Dichloroethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,1-Dichloroethene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,2,4-Trichlorobenzene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,2,4-Trimethylbenzene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | 0.274 | 0.200 |
| 1,2-Dibromoethane (EDB) | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,2-Dichlorobenzene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,2-Dichloroethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,2-Dichloropropane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,3,5-Trimethylbenzene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,3-Butadiene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | 0.510 | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,3-Dichlorobenzene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,4-Dichlorobenzene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 1,4-Dioxane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | 1.07 | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 2,2,4-Trimethylpentane | ppbV | 19.9 | 2.00 | 0.225 | 0.200 | 114 | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 2-Butanone | ppbV | 353 | 2.00 | 15.0 | 0.200 | 100 | 2.00 | 43.5 | 0.400 | 92600<br>112000 (dup) | 111<br>557 (dup) | 15800 | 41.1 | 31.7 | 1.00 | 16.0 | 0.500 | 12.2 | 2.00 | 11.9 | 0.500 | 1.04 | 0.200 |
| 2-Hexanone | ppbV | < | 2.00 | 0.868 | 0.200 | < | 2.00 | 1.20 | 0.400 | < | 111 | < | 41.1 | < | 1.00 | 0.754 | 0.500 | < | 2.00 | 0.913 | 0.500 | < | 0.200 |
| 3-Chloropropene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| 4-Ethyltoluene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Acetone | ppbV | < | 5.00 | 71.8 | 0.500 | < | 5.00 | < | 1.000 | 550 | 279 | 139 | 103 | < | 2.50 | 32.4 | 1.25 | < | 5.00 | 42.9 | 1.25 | 11.5 | 0.500 |
| Benzene | ppbV | < | 2.00 | 0.343 | 0.200 | 3.53 | 2.00 | 0.449 | 0.400 | < | 111 | < | 41.1 | 9.38 | 1.00 | < | 0.500 | 4.88 | 2.00 | < | 0.500 | 0.205 | 0.200 |
| Benzyl chloride | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Bromochloromethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Bromoform | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Bromomethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Carbon Disulfide | ppbV | < | 2.00 | 0.458 | 0.200 | < | 2.00 | 0.400 | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | 0.846 | 0.500 | < | 0.200 |
| Carbon Tetrachloride | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Chlorobenzene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Chloroethane | ppbV | 2.92 | 2.00 | 0.495 | 0.200 | 11.0 | 2.00 | 4.90 | 0.400 | < | 111 | < | 41.1 | 1.34 | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Chloroform | ppbV | < | 2.00 | < | 0.200 | 4.32 | 2.00 | < | 0.400 | < | 111 | < | 41.1 | 1.40 | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Chloromethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | 0.522 | 0.200 |
| cis-1,2-Dichloroethene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| cis-1,3-Dichloropropene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Cyclohexane | ppbV | 20.3 | 2.00 | < | 0.200 | 86.6 | 2.00 | < | 0.400 | < | 111 | < | 41.1 | 81.7 | 1.00 | < | 0.500 | 45.1 | 2.00 | < | 0.500 | < | 0.200 |
| Dibromochloromethane | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Dichlorodifluoromethane | ppbV | < | 2.00 | 0.534 | 0.200 | < | 2.00 | 0.568 | 0.400 | < | 111 | < | 41.1 | < | 1.00 | 0.575 | 0.500 | < | 2.00 | < | 0.500 | 0.528 | 0.200 |
| Ethanol | ppbV | 49.3 | 25.0 | 12.9 | 2.50 | < | 25.0 | 16.8 | 5.000 | < | 1390 | < | 514 | 17.1 | 12.5 | 7.35 | 6.25 | < | 25.0 | 7.77 | 6.25 | 2.58 | 2.50 |
| Ethyl Acetate | ppbV | < | 5.00 | < | 0.500 | < | 5.00 | < | 1.000 | < | 279 | < | 103 | < | 2.50 | < | 1.25 | < | 5.00 | < | 1.25 | < | 0.500 |
| Ethylbenzene | ppbV | < | 2.00 | < | 0.200 | 2.95 | 2.00 | < | 0.400 | < | 111 | < | 41.1 | 1.51 | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | 0.232 | 0.200 |
| Freon-113 | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Freon-114 | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Hexachlorobutadiene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Isopropanol | ppbV | 7.25 | 5.00 | 3.10 | 0.500 | < | 5.00 | 4.73 | 1.000 | < | 279 | < | 103 | 6.65 | 2.50 | 1.88 | 1.25 | 12.0 | 5.00 | 1.98 | 1.25 | 0.852 | 0.500 |
| Methylene Chloride | ppbV | < | 5.00 | < | 0.500 | < | 5.00 | < | 1.000 | < | 279 | < | 103 | < | 2.50 | < | 1.25 | < | 5.00 | < | 1.25 | < | 0.500 |
| 4-Methyl-2-Pentanone | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | 1.82 | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Methyl-Tert-Butyl-Ether | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| m&p-Xylene | ppbV | < | 4.00 | < | 0.400 | 5.94 | 4.00 | < | 0.800 | < | 223 | < | 82.2 | 3.68 | 2.00 | 1.18 | 1.00 | < | 4.00 | 1.27 | 1.00 | 0.762 | 0.400 |
| o-Xylene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | 1.39 | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | 0.253 | 0.200 |
| Heptane | ppbV | 4.80 | 2.00 | < | 0.200 | 74.5 | 2.00 | < | 0.400 | < | 111 | < | 41.1 | 96.0 | 1.00 | < | 0.500 | 56.5 | 2.00 | < | 0.500 | < | 0.200 |
| n-Hexane | ppbV | 11.5 | 2.00 | 0.204 | 0.200 | 203 | 2.00 | < | 0.400 | < | 111 | < | 41.1 | 248 | 1.00 | < | 0.500 | 130 | 2.00 | < | 0.500 | < | 0.200 |
| Propylene | ppbV | 42.0 | 2.00 | 4.26 | 0.200 | 163 | 2.00 | 8.35 | 0.400 | < | 111 | < | 41.1 | 115 | 1.00 | < | 0.500 | 85.0 | 2.00 | 2.11 | 0.500 | < | 0.200 |
| Styrene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Tetrachloroethene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | 0.227 | 0.200 |
| Tetrahydrofuran | ppbV | 385 | 2.00 | 6.71 | 0.200 | 475 | 2.00 | 23.1 | 0.400 | 14300 | 111 | 3710 | 41.1 | 125 | 1.00 | 200 | 0.500 | 11.3 | 2.00 | 5.68 | 0.500 | < | 0.200 |
| Toluene | ppbV | 2.51 | 2.00 | 0.691 | 0.200 | 123 | 2.00 | 1.23 | 0.400 | < | 111 | < | 41.1 | 31.3 | 1.00 | 1.10 | 0.500 | 13.1 | 2.00 | 1.19 | 0.500 | 0.558 | 0.200 |
| trans-1,2-Dichloroethene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| trans-1,3-Dichloropropene | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Trichloroethene | ppbV | 7.65 | 2.00 | 1.19 | 0.200 | 13.8 | 2.00 | 0.993 | 0.400 | < | 111 | < | 41.1 | 24.8 | 1.00 | 1.00 | 0.500 | 2.78 | 2.00 | 1.65 | 0.500 | 0.334 | 0.200 |
| Trichlorofluoromethane | ppbV | < | 2.00 | 0.514 | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | 0.772 | 0.500 | 0.288 | 0.200 |
| Vinyl acetate | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Vinyl bromide | ppbV | < | 2.00 | < | 0.200 | < | 2.00 | < | 0.400 | < | 111 | < | 41.1 | < | 1.00 | < | 0.500 | < | 2.00 | < | 0.500 | < | 0.200 |
| Vinyl Chloride | ppbV | 3.05 | 2.00 | < | 0.200 | 8.32 | 2.00 | < | 0.400 | < | 111 | < | 41.1 | 6.28 | 1.00 | < | 0.500 | 9.80 | 2.00 | < | 0.500 | < | 0.200 |

Note: Highlight indicates constituent is a Contaminant of Potential Concern (COPC).

J:\15,000-16,999\16356.24K\16356-85.MMS\Air sampling QAPP\Report\[table 3 for July 1 sampling round.xls]Revised on 092509 (0901-00118)

# APPENDIX A

# SOIL VAPOR LABORATORY TEST REPORT

# ANALYTICAL REPORT

| | |
|---|---|
| Lab Number: | L0908991 |
| Client: | GZA GeoEnvironmental, Inc.<br>1 Edgewater Drive<br>Norwood, MA 02062 |
| ATTN: | Matt Smith |
| Project Name: | ELMWAY FARMS |
| Project Number: | 16356.85 |
| Report Date: | 07/13/09 |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908991
**Report Date:** 07/13/09

| Alpha Sample ID | Client ID | Sample Location | Collection Date/Time |
|---|---|---|---|
| L0908991-01 | RETAIL B NORTHWEST-A1 | NORWOOD, MA | 07/01/09 15:45 |
| L0908991-02 | RETAIL B NORTHWEST-B2 | NORWOOD, MA | 07/01/09 15:45 |
| L0908991-03 | RETAIL B NORTHMID-A1 | NORWOOD, MA | 07/01/09 16:00 |
| L0908991-04 | RETAIL B NORTHMID-B2 | NORWOOD, MA | 07/01/09 16:00 |
| L0908991-05 | RETAIL B NORTHEAST-A1 | NORWOOD, MA | 07/01/09 16:25 |
| L0908991-06 | RETAIL B NORTHEAST-B2 | NORWOOD, MA | 07/01/09 16:25 |
| L0908991-07 | RETAIL A NORTH-A1 | NORWOOD, MA | 07/01/09 16:40 |
| L0908991-08 | RETAIL A NORTH-B2 | NORWOOD, MA | 07/01/09 16:40 |

**Project Name:** ELMWAY FARMS **Lab Number:** L0908991
**Project Number:** 16356.85 **Report Date:** 07/13/09

## Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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Volatile Organics in Air (Low Level)

L0908991-01 and -03 have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.
L0908991-01, -03, -04, and -07: The presence of Acetone could not be determined in this sample due to non-target compounds interfering with the identification and quantification of this compound.
L0908991-04 has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.
L0908991-05 has elevated detection limits due to the dilution required by the elevated concentrations of target

| | | | |
|---|---|---|---|
| **Project Name:** | ELMWAY FARMS | **Lab Number:** | L0908991 |
| **Project Number:** | 16356.85 | **Report Date:** | 07/13/09 |

**Case Narrative (continued)**

compounds in the sample. The sample was re-analyzed on dilution in order to quantitate the sample within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial analysis. The re-analysis was performed only for the compound that exceeded the calibration range.
L0908991-06 through -08 have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

The WG370013-3 LCS recovery for 1,2-Dichloroethane (134%) is outside the 70%-130% acceptance limit. The LCS was within overall method allowances, therefore the analysis proceeded.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kathleen M. O'Brien

Title: Technical Director/Representative Date: 07/13/09

# AIR

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-01 D
Client ID: RETAIL B NORTHWEST-A1
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/08/09 22:37
Analyst: RY

Date Collected: 07/01/09 15:45
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 2.00 | ND | 10.9 | | 10 |
| 1,1,2,2-Tetrachloroethane | ND | 2.00 | ND | 13.7 | | 10 |
| 1,1,2-Trichloroethane | ND | 2.00 | ND | 10.9 | | 10 |
| 1,1-Dichloroethane | ND | 2.00 | ND | 8.09 | | 10 |
| 1,1-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| 1,2,4-Trichlorobenzene | ND | 2.00 | ND | 14.8 | | 10 |
| 1,2,4-Trimethylbenzene | ND | 2.00 | ND | 9.82 | | 10 |
| 1,2-Dibromoethane | ND | 2.00 | ND | 15.4 | | 10 |
| 1,2-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,2-Dichloroethane | ND | 2.00 | ND | 8.09 | | 10 |
| 1,2-Dichloropropane | ND | 2.00 | ND | 9.24 | | 10 |
| 1,3,5-Trimethybenzene | ND | 2.00 | ND | 9.82 | | 10 |
| 1,3-Butadiene | ND | 2.00 | ND | 4.42 | | 10 |
| 1,3-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,4-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,4-Dioxane | ND | 2.00 | ND | 7.20 | | 10 |
| 2,2,4-Trimethylpentane | 19.9 | 2.00 | 92.8 | 9.34 | | 10 |
| 2-Butanone | 353 | 2.00 | 1040 | 5.89 | | 10 |
| 2-Hexanone | ND | 2.00 | ND | 8.19 | | 10 |
| 3-Chloropropene | ND | 2.00 | ND | 6.26 | | 10 |
| 4-Ethyltoluene | ND | 2.00 | ND | 9.82 | | 10 |
| Acetone | ND | 5.00 | ND | 11.9 | | 10 |
| Benzene | ND | 2.00 | ND | 6.38 | | 10 |
| Benzyl chloride | ND | 2.00 | ND | 10.3 | | 10 |
| Bromodichloromethane | ND | 2.00 | ND | 13.4 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-01 D
Client ID: RETAIL B NORTHWEST-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 15:45
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 2.00 | ND | 20.6 | | 10 |
| Bromomethane | ND | 2.00 | ND | 7.76 | | 10 |
| Carbon disulfide | ND | 2.00 | ND | 6.22 | | 10 |
| Carbon tetrachloride | ND | 2.00 | ND | 12.6 | | 10 |
| Chlorobenzene | ND | 2.00 | ND | 9.20 | | 10 |
| Chloroethane | 2.92 | 2.00 | 7.69 | 5.27 | | 10 |
| Chloroform | ND | 2.00 | ND | 9.76 | | 10 |
| Chloromethane | ND | 2.00 | ND | 4.13 | | 10 |
| cis-1,2-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| cis-1,3-Dichloropropene | ND | 2.00 | ND | 9.07 | | 10 |
| Cyclohexane | 20.3 | 2.00 | 69.8 | 6.88 | | 10 |
| Dibromochloromethane | ND | 2.00 | ND | 17.0 | | 10 |
| Dichlorodifluoromethane | ND | 2.00 | ND | 9.88 | | 10 |
| Ethanol | 49.3 | 25.0 | 92.8 | 47.1 | | 10 |
| Ethyl Acetate | ND | 5.00 | ND | 18.0 | | 10 |
| Ethylbenzene | ND | 2.00 | ND | 8.68 | | 10 |
| Freon-113 | ND | 2.00 | ND | 15.3 | | 10 |
| Freon-114 | ND | 2.00 | ND | 14.0 | | 10 |
| Hexachlorobutadiene | ND | 2.00 | ND | 21.3 | | 10 |
| Isopropanol | 7.25 | 5.00 | 17.8 | 12.3 | | 10 |
| Methylene chloride | ND | 5.00 | ND | 17.4 | | 10 |
| 4-Methyl-2-pentanone | ND | 2.00 | ND | 8.19 | | 10 |
| Methyl tert butyl ether | ND | 2.00 | ND | 7.20 | | 10 |
| p/m-Xylene | ND | 4.00 | ND | 17.4 | | 10 |
| o-Xylene | ND | 2.00 | ND | 8.68 | | 10 |
| Heptane | 4.80 | 2.00 | 19.6 | 8.19 | | 10 |
| n-Hexane | 11.5 | 2.00 | 40.5 | 7.04 | | 10 |
| Propylene | 42.0 | 2.00 | 72.2 | 3.44 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-01 D
Client ID: RETAIL B NORTHWEST-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 15:45
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 2.00 | ND | 8.51 | | 10 |
| Tetrachloroethene | ND | 2.00 | ND | 13.6 | | 10 |
| Tetrahydrofuran | 385 | 2.00 | 1130 | 5.89 | | 10 |
| Toluene | 2.51 | 2.00 | 9.44 | 7.53 | | 10 |
| trans-1,2-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| trans-1,3-Dichloropropene | ND | 2.00 | ND | 9.07 | | 10 |
| Trichloroethene | 7.65 | 2.00 | 41.1 | 10.7 | | 10 |
| Trichlorofluoromethane | ND | 2.00 | ND | 11.2 | | 10 |
| Vinyl acetate | ND | 2.00 | ND | 7.04 | | 10 |
| Vinyl bromide | ND | 2.00 | ND | 8.74 | | 10 |
| Vinyl chloride | 3.05 | 2.00 | 7.79 | 5.11 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-02
Client ID: RETAIL B NORTHWEST-B2
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/08/09 23:15
Analyst: RY

Date Collected: 07/01/09 15:45
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.200 | ND | 1.09 | | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 0.200 | ND | 1.37 | | 1 |
| 1,1,2-Trichloroethane | ND | 0.200 | ND | 1.09 | | 1 |
| 1,1-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,1-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| 1,2,4-Trichlorobenzene | ND | 0.200 | ND | 1.48 | | 1 |
| 1,2,4-Trimethylbenzene | ND | 0.200 | ND | 0.982 | | 1 |
| 1,2-Dibromoethane | ND | 0.200 | ND | 1.54 | | 1 |
| 1,2-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,2-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,2-Dichloropropane | ND | 0.200 | ND | 0.924 | | 1 |
| 1,3,5-Trimethybenzene | ND | 0.200 | ND | 0.982 | | 1 |
| 1,3-Butadiene | ND | 0.200 | ND | 0.442 | | 1 |
| 1,3-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dioxane | ND | 0.200 | ND | 0.720 | | 1 |
| 2,2,4-Trimethylpentane | 0.225 | 0.200 | 1.05 | 0.934 | | 1 |
| 2-Butanone | 15.0 | 0.200 | 44.2 | 0.589 | | 1 |
| 2-Hexanone | 0.868 | 0.200 | 3.55 | 0.819 | | 1 |
| 3-Chloropropene | ND | 0.200 | ND | 0.626 | | 1 |
| 4-Ethyltoluene | ND | 0.200 | ND | 0.982 | | 1 |
| Acetone | 71.8 | 0.500 | 170 | 1.19 | | 1 |
| Benzene | 0.343 | 0.200 | 1.09 | 0.638 | | 1 |
| Benzyl chloride | ND | 0.200 | ND | 1.03 | | 1 |
| Bromodichloromethane | ND | 0.200 | ND | 1.34 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-02
Client ID: RETAIL B NORTHWEST-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 15:45
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 0.200 | ND | 2.06 | | 1 |
| Bromomethane | ND | 0.200 | ND | 0.776 | | 1 |
| Carbon disulfide | 0.458 | 0.200 | 1.43 | 0.622 | | 1 |
| Carbon tetrachloride | ND | 0.200 | ND | 1.26 | | 1 |
| Chlorobenzene | ND | 0.200 | ND | 0.920 | | 1 |
| Chloroethane | 0.495 | 0.200 | 1.30 | 0.527 | | 1 |
| Chloroform | ND | 0.200 | ND | 0.976 | | 1 |
| Chloromethane | ND | 0.200 | ND | 0.413 | | 1 |
| cis-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| cis-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Cyclohexane | ND | 0.200 | ND | 0.688 | | 1 |
| Dibromochloromethane | ND | 0.200 | ND | 1.70 | | 1 |
| Dichlorodifluoromethane | 0.534 | 0.200 | 2.64 | 0.988 | | 1 |
| Ethanol | 12.9 | 2.50 | 24.3 | 4.71 | | 1 |
| Ethyl Acetate | ND | 0.500 | ND | 1.80 | | 1 |
| Ethylbenzene | ND | 0.200 | ND | 0.868 | | 1 |
| Freon-113 | ND | 0.200 | ND | 1.53 | | 1 |
| Freon-114 | ND | 0.200 | ND | 1.40 | | 1 |
| Hexachlorobutadiene | ND | 0.200 | ND | 2.13 | | 1 |
| Isopropanol | 3.10 | 0.500 | 7.62 | 1.23 | | 1 |
| Methylene chloride | ND | 0.500 | ND | 1.74 | | 1 |
| 4-Methyl-2-pentanone | ND | 0.200 | ND | 0.819 | | 1 |
| Methyl tert butyl ether | ND | 0.200 | ND | 0.720 | | 1 |
| p/m-Xylene | ND | 0.400 | ND | 1.74 | | 1 |
| o-Xylene | ND | 0.200 | ND | 0.868 | | 1 |
| Heptane | ND | 0.200 | ND | 0.819 | | 1 |
| n-Hexane | 0.204 | 0.200 | 0.717 | 0.704 | | 1 |
| Propylene | 4.26 | 0.200 | 7.33 | 0.344 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-02
Client ID: RETAIL B NORTHWEST-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 15:45
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 0.200 | ND | 0.851 | | 1 |
| Tetrachloroethene | ND | 0.200 | ND | 1.36 | | 1 |
| Tetrahydrofuran | 6.71 | 0.200 | 19.8 | 0.589 | | 1 |
| Toluene | 0.691 | 0.200 | 2.60 | 0.753 | | 1 |
| trans-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| trans-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Trichloroethene | 1.19 | 0.200 | 6.40 | 1.07 | | 1 |
| Trichlorofluoromethane | 0.514 | 0.200 | 2.88 | 1.12 | | 1 |
| Vinyl acetate | ND | 0.200 | ND | 0.704 | | 1 |
| Vinyl bromide | ND | 0.200 | ND | 0.874 | | 1 |
| Vinyl chloride | ND | 0.200 | ND | 0.511 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-03 D
Client ID: RETAIL B NORTHMID-A1
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/08/09 23:52
Analyst: RY

Date Collected: 07/01/09 16:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 2.00 | ND | 10.9 | | 10 |
| 1,1,2,2-Tetrachloroethane | ND | 2.00 | ND | 13.7 | | 10 |
| 1,1,2-Trichloroethane | ND | 2.00 | ND | 10.9 | | 10 |
| 1,1-Dichloroethane | ND | 2.00 | ND | 8.09 | | 10 |
| 1,1-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| 1,2,4-Trichlorobenzene | ND | 2.00 | ND | 14.8 | | 10 |
| 1,2,4-Trimethylbenzene | ND | 2.00 | ND | 9.82 | | 10 |
| 1,2-Dibromoethane | ND | 2.00 | ND | 15.4 | | 10 |
| 1,2-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,2-Dichloroethane | ND | 2.00 | ND | 8.09 | | 10 |
| 1,2-Dichloropropane | ND | 2.00 | ND | 9.24 | | 10 |
| 1,3,5-Trimethybenzene | ND | 2.00 | ND | 9.82 | | 10 |
| 1,3-Butadiene | ND | 2.00 | ND | 4.42 | | 10 |
| 1,3-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,4-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,4-Dioxane | ND | 2.00 | ND | 7.20 | | 10 |
| 2,2,4-Trimethylpentane | 114 | 2.00 | 530 | 9.34 | | 10 |
| 2-Butanone | 100 | 2.00 | 295 | 5.89 | | 10 |
| 2-Hexanone | ND | 2.00 | ND | 8.19 | | 10 |
| 3-Chloropropene | ND | 2.00 | ND | 6.26 | | 10 |
| 4-Ethyltoluene | ND | 2.00 | ND | 9.82 | | 10 |
| Acetone | ND | 5.00 | ND | 11.9 | | 10 |
| Benzene | 3.53 | 2.00 | 11.3 | 6.38 | | 10 |
| Benzyl chloride | ND | 2.00 | ND | 10.3 | | 10 |
| Bromodichloromethane | ND | 2.00 | ND | 13.4 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-03 D
Client ID: RETAIL B NORTHMID-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 2.00 | ND | 20.6 | | 10 |
| Bromomethane | ND | 2.00 | ND | 7.76 | | 10 |
| Carbon disulfide | ND | 2.00 | ND | 6.22 | | 10 |
| Carbon tetrachloride | ND | 2.00 | ND | 12.6 | | 10 |
| Chlorobenzene | ND | 2.00 | ND | 9.20 | | 10 |
| Chloroethane | 11.0 | 2.00 | 29.0 | 5.27 | | 10 |
| Chloroform | 4.32 | 2.00 | 21.1 | 9.76 | | 10 |
| Chloromethane | ND | 2.00 | ND | 4.13 | | 10 |
| cis-1,2-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| cis-1,3-Dichloropropene | ND | 2.00 | ND | 9.07 | | 10 |
| Cyclohexane | 86.6 | 2.00 | 298 | 6.88 | | 10 |
| Dibromochloromethane | ND | 2.00 | ND | 17.0 | | 10 |
| Dichlorodifluoromethane | ND | 2.00 | ND | 9.88 | | 10 |
| Ethanol | ND | 25.0 | ND | 47.1 | | 10 |
| Ethyl Acetate | ND | 5.00 | ND | 18.0 | | 10 |
| Ethylbenzene | 2.95 | 2.00 | 12.8 | 8.68 | | 10 |
| Freon-113 | ND | 2.00 | ND | 15.3 | | 10 |
| Freon-114 | ND | 2.00 | ND | 14.0 | | 10 |
| Hexachlorobutadiene | ND | 2.00 | ND | 21.3 | | 10 |
| Isopropanol | ND | 5.00 | ND | 12.3 | | 10 |
| Methylene chloride | ND | 5.00 | ND | 17.4 | | 10 |
| 4-Methyl-2-pentanone | ND | 2.00 | ND | 8.19 | | 10 |
| Methyl tert butyl ether | ND | 2.00 | ND | 7.20 | | 10 |
| p/m-Xylene | 5.94 | 4.00 | 25.8 | 17.4 | | 10 |
| o-Xylene | ND | 2.00 | ND | 8.68 | | 10 |
| Heptane | 74.5 | 2.00 | 305 | 8.19 | | 10 |
| n-Hexane | 203 | 2.00 | 715 | 7.04 | | 10 |
| Propylene | 163 | 2.00 | 280 | 3.44 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-03 D
Client ID: RETAIL B NORTHMID-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 2.00 | ND | 8.51 | | 10 |
| Tetrachloroethene | ND | 2.00 | ND | 13.6 | | 10 |
| Tetrahydrofuran | 475 | 2.00 | 1400 | 5.89 | | 10 |
| Toluene | 123 | 2.00 | 464 | 7.53 | | 10 |
| trans-1,2-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| trans-1,3-Dichloropropene | ND | 2.00 | ND | 9.07 | | 10 |
| Trichloroethene | 13.8 | 2.00 | 74.4 | 10.7 | | 10 |
| Trichlorofluoromethane | ND | 2.00 | ND | 11.2 | | 10 |
| Vinyl acetate | ND | 2.00 | ND | 7.04 | | 10 |
| Vinyl bromide | ND | 2.00 | ND | 8.74 | | 10 |
| Vinyl chloride | 8.32 | 2.00 | 21.3 | 5.11 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-04 D
Client ID: RETAIL B NORTHMID-B2
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/09/09 00:29
Analyst: RY

Date Collected: 07/01/09 16:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.400 | ND | 2.18 | | 2 |
| 1,1,2,2-Tetrachloroethane | ND | 0.400 | ND | 2.74 | | 2 |
| 1,1,2-Trichloroethane | ND | 0.400 | ND | 2.18 | | 2 |
| 1,1-Dichloroethane | ND | 0.400 | ND | 1.62 | | 2 |
| 1,1-Dichloroethene | ND | 0.400 | ND | 1.58 | | 2 |
| 1,2,4-Trichlorobenzene | ND | 0.400 | ND | 2.97 | | 2 |
| 1,2,4-Trimethylbenzene | ND | 0.400 | ND | 1.96 | | 2 |
| 1,2-Dibromoethane | ND | 0.400 | ND | 3.07 | | 2 |
| 1,2-Dichlorobenzene | ND | 0.400 | ND | 2.40 | | 2 |
| 1,2-Dichloroethane | ND | 0.400 | ND | 1.62 | | 2 |
| 1,2-Dichloropropane | ND | 0.400 | ND | 1.85 | | 2 |
| 1,3,5-Trimethybenzene | ND | 0.400 | ND | 1.96 | | 2 |
| 1,3-Butadiene | ND | 0.400 | ND | 0.884 | | 2 |
| 1,3-Dichlorobenzene | ND | 0.400 | ND | 2.40 | | 2 |
| 1,4-Dichlorobenzene | ND | 0.400 | ND | 2.40 | | 2 |
| 1,4-Dioxane | 1.07 | 0.400 | 3.86 | 1.44 | | 2 |
| 2,2,4-Trimethylpentane | ND | 0.400 | ND | 1.87 | | 2 |
| 2-Butanone | 43.5 | 0.400 | 128 | 1.18 | | 2 |
| 2-Hexanone | 1.20 | 0.400 | 4.93 | 1.64 | | 2 |
| 3-Chloropropene | ND | 0.400 | ND | 1.25 | | 2 |
| 4-Ethyltoluene | ND | 0.400 | ND | 1.96 | | 2 |
| Acetone | ND | 1.00 | ND | 2.37 | | 2 |
| Benzene | 0.449 | 0.400 | 1.43 | 1.28 | | 2 |
| Benzyl chloride | ND | 0.400 | ND | 2.07 | | 2 |
| Bromodichloromethane | ND | 0.400 | ND | 2.68 | | 2 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-04 D
Client ID: RETAIL B NORTHMID-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 0.400 | ND | 4.13 | | 2 |
| Bromomethane | ND | 0.400 | ND | 1.55 | | 2 |
| Carbon disulfide | 0.400 | 0.400 | 1.24 | 1.24 | | 2 |
| Carbon tetrachloride | ND | 0.400 | ND | 2.51 | | 2 |
| Chlorobenzene | ND | 0.400 | ND | 1.84 | | 2 |
| Chloroethane | 4.90 | 0.400 | 12.9 | 1.05 | | 2 |
| Chloroform | ND | 0.400 | ND | 1.95 | | 2 |
| Chloromethane | ND | 0.400 | ND | 0.825 | | 2 |
| cis-1,2-Dichloroethene | ND | 0.400 | ND | 1.58 | | 2 |
| cis-1,3-Dichloropropene | ND | 0.400 | ND | 1.81 | | 2 |
| Cyclohexane | ND | 0.400 | ND | 1.38 | | 2 |
| Dibromochloromethane | ND | 0.400 | ND | 3.40 | | 2 |
| Dichlorodifluoromethane | 0.568 | 0.400 | 2.81 | 1.98 | | 2 |
| Ethanol | 16.8 | 5.00 | 31.7 | 9.41 | | 2 |
| Ethyl Acetate | ND | 1.00 | ND | 3.60 | | 2 |
| Ethylbenzene | ND | 0.400 | ND | 1.74 | | 2 |
| Freon-113 | ND | 0.400 | ND | 3.06 | | 2 |
| Freon-114 | ND | 0.400 | ND | 2.79 | | 2 |
| Hexachlorobutadiene | ND | 0.400 | ND | 4.26 | | 2 |
| Isopropanol | 4.73 | 1.00 | 11.6 | 2.46 | | 2 |
| Methylene chloride | ND | 1.00 | ND | 3.47 | | 2 |
| 4-Methyl-2-pentanone | 1.82 | 0.400 | 7.44 | 1.64 | | 2 |
| Methyl tert butyl ether | ND | 0.400 | ND | 1.44 | | 2 |
| p/m-Xylene | ND | 0.800 | ND | 3.47 | | 2 |
| o-Xylene | ND | 0.400 | ND | 1.74 | | 2 |
| Heptane | ND | 0.400 | ND | 1.64 | | 2 |
| n-Hexane | ND | 0.400 | ND | 1.41 | | 2 |
| Propylene | 8.35 | 0.400 | 14.4 | 0.688 | | 2 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-04 D
Client ID: RETAIL B NORTHMID-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 0.400 | ND | 1.70 | | 2 |
| Tetrachloroethene | ND | 0.400 | ND | 2.71 | | 2 |
| Tetrahydrofuran | 23.1 | 0.400 | 68.0 | 1.18 | | 2 |
| Toluene | 1.23 | 0.400 | 4.64 | 1.51 | | 2 |
| trans-1,2-Dichloroethene | ND | 0.400 | ND | 1.58 | | 2 |
| trans-1,3-Dichloropropene | ND | 0.400 | ND | 1.81 | | 2 |
| Trichloroethene | 0.993 | 0.400 | 5.33 | 2.15 | | 2 |
| Trichlorofluoromethane | ND | 0.400 | ND | 2.24 | | 2 |
| Vinyl acetate | ND | 0.400 | ND | 1.41 | | 2 |
| Vinyl bromide | ND | 0.400 | ND | 1.75 | | 2 |
| Vinyl chloride | ND | 0.400 | ND | 1.02 | | 2 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-05 D
Client ID: RETAIL B NORTHEAST-A1
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/09/09 01:06
Analyst: RY

Date Collected: 07/01/09 16:25
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 111. | ND | 608. | | 557.3 |
| 1,1,2,2-Tetrachloroethane | ND | 111. | ND | 764. | | 557.3 |
| 1,1,2-Trichloroethane | ND | 111. | ND | 608. | | 557.3 |
| 1,1-Dichloroethane | ND | 111. | ND | 451. | | 557.3 |
| 1,1-Dichloroethene | ND | 111. | ND | 442. | | 557.3 |
| 1,2,4-Trichlorobenzene | ND | 111. | ND | 826. | | 557.3 |
| 1,2,4-Trimethylbenzene | ND | 111. | ND | 547. | | 557.3 |
| 1,2-Dibromoethane | ND | 111. | ND | 856. | | 557.3 |
| 1,2-Dichlorobenzene | ND | 111. | ND | 670. | | 557.3 |
| 1,2-Dichloroethane | ND | 111. | ND | 451. | | 557.3 |
| 1,2-Dichloropropane | ND | 111. | ND | 515. | | 557.3 |
| 1,3,5-Trimethybenzene | ND | 111. | ND | 547. | | 557.3 |
| 1,3-Butadiene | ND | 111. | ND | 246. | | 557.3 |
| 1,3-Dichlorobenzene | ND | 111. | ND | 670. | | 557.3 |
| 1,4-Dichlorobenzene | ND | 111. | ND | 670. | | 557.3 |
| 1,4-Dioxane | ND | 111. | ND | 401. | | 557.3 |
| 2,2,4-Trimethylpentane | ND | 111. | ND | 520. | | 557.3 |
| 2-Butanone | 92600 | 111 | 273000 | 328 | E | 557.3 |
| 2-Hexanone | ND | 111. | ND | 456. | | 557.3 |
| 3-Chloropropene | ND | 111. | ND | 348. | | 557.3 |
| 4-Ethyltoluene | ND | 111. | ND | 547. | | 557.3 |
| Acetone | 550 | 279 | 1300 | 661 | | 557.3 |
| Benzene | ND | 111. | ND | 356. | | 557.3 |
| Benzyl chloride | ND | 111. | ND | 577. | | 557.3 |
| Bromodichloromethane | ND | 111. | ND | 746. | | 557.3 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-05 D
Client ID: RETAIL B NORTHEAST-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:25
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 111. | ND | 1150 | | 557.3 |
| Bromomethane | ND | 111. | ND | 432. | | 557.3 |
| Carbon disulfide | ND | 111. | ND | 347. | | 557.3 |
| Carbon tetrachloride | ND | 111. | ND | 701. | | 557.3 |
| Chlorobenzene | ND | 111. | ND | 513. | | 557.3 |
| Chloroethane | ND | 111. | ND | 294. | | 557.3 |
| Chloroform | ND | 111. | ND | 544. | | 557.3 |
| Chloromethane | ND | 111. | ND | 230. | | 557.3 |
| cis-1,2-Dichloroethene | ND | 111. | ND | 442. | | 557.3 |
| cis-1,3-Dichloropropene | ND | 111. | ND | 505. | | 557.3 |
| Cyclohexane | ND | 111. | ND | 383. | | 557.3 |
| Dibromochloromethane | ND | 111. | ND | 949. | | 557.3 |
| Dichlorodifluoromethane | ND | 111. | ND | 551. | | 557.3 |
| Ethanol | ND | 1390 | ND | 2620 | | 557.3 |
| Ethyl Acetate | ND | 279. | ND | 1000 | | 557.3 |
| Ethylbenzene | ND | 111. | ND | 484. | | 557.3 |
| Freon-113 | ND | 111. | ND | 854. | | 557.3 |
| Freon-114 | ND | 111. | ND | 778. | | 557.3 |
| Hexachlorobutadiene | ND | 111. | ND | 1190 | | 557.3 |
| Isopropanol | ND | 279. | ND | 684. | | 557.3 |
| Methylene chloride | ND | 279 | ND | 967 | | 557.3 |
| 4-Methyl-2-pentanone | ND | 111. | ND | 456. | | 557.3 |
| Methyl tert butyl ether | ND | 111. | ND | 402. | | 557.3 |
| p/m-Xylene | ND | 223. | ND | 967. | | 557.3 |
| o-Xylene | ND | 111. | ND | 484. | | 557.3 |
| Heptane | ND | 111. | ND | 456. | | 557.3 |
| n-Hexane | ND | 111. | ND | 392. | | 557.3 |
| Propylene | ND | 111. | ND | 192. | | 557.3 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-05 D
Client ID: RETAIL B NORTHEAST-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:25
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 111. | ND | 474. | | 557.3 |
| Tetrachloroethene | ND | 111. | ND | 755. | | 557.3 |
| Tetrahydrofuran | 14300 | 111 | 42100 | 328 | | 557.3 |
| Toluene | ND | 111. | ND | 420. | | 557.3 |
| trans-1,2-Dichloroethene | ND | 111. | ND | 442. | | 557.3 |
| trans-1,3-Dichloropropene | ND | 111. | ND | 505. | | 557.3 |
| Trichloroethene | ND | 111. | ND | 598. | | 557.3 |
| Trichlorofluoromethane | ND | 111. | ND | 626. | | 557.3 |
| Vinyl acetate | ND | 111. | ND | 392. | | 557.3 |
| Vinyl bromide | ND | 111. | ND | 487. | | 557.3 |
| Vinyl chloride | ND | 111. | ND | 285. | | 557.3 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-05 R\D
Client ID: RETAIL B NORTHEAST-A1
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/09/09 09:44
Analyst: RY

Date Collected: 07/01/09 16:25
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab | | | | | | |
| 2-Butanone | 112000 | 557 | 331000 | 1640 | | 2787 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-06 D
Client ID: RETAIL B NORTHEAST-B2
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/09/09 01:43
Analyst: RY

Date Collected: 07/01/09 16:25
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 41.1 | ND | 224. | | 205.5 |
| 1,1,2,2-Tetrachloroethane | ND | 41.1 | ND | 282. | | 205.5 |
| 1,1,2-Trichloroethane | ND | 41.1 | ND | 224. | | 205.5 |
| 1,1-Dichloroethane | ND | 41.1 | ND | 166. | | 205.5 |
| 1,1-Dichloroethene | ND | 41.1 | ND | 163. | | 205.5 |
| 1,2,4-Trichlorobenzene | ND | 41.1 | ND | 305. | | 205.5 |
| 1,2,4-Trimethylbenzene | ND | 41.1 | ND | 202. | | 205.5 |
| 1,2-Dibromoethane | ND | 41.1 | ND | 316. | | 205.5 |
| 1,2-Dichlorobenzene | ND | 41.1 | ND | 247. | | 205.5 |
| 1,2-Dichloroethane | ND | 41.1 | ND | 166. | | 205.5 |
| 1,2-Dichloropropane | ND | 41.1 | ND | 190. | | 205.5 |
| 1,3,5-Trimethybenzene | ND | 41.1 | ND | 202. | | 205.5 |
| 1,3-Butadiene | ND | 41.1 | ND | 90.8 | | 205.5 |
| 1,3-Dichlorobenzene | ND | 41.1 | ND | 247. | | 205.5 |
| 1,4-Dichlorobenzene | ND | 41.1 | ND | 247. | | 205.5 |
| 1,4-Dioxane | ND | 41.1 | ND | 148. | | 205.5 |
| 2,2,4-Trimethylpentane | ND | 41.1 | ND | 192. | | 205.5 |
| 2-Butanone | 15800 | 41.1 | 46500 | 121 | | 205.5 |
| 2-Hexanone | ND | 41.1 | ND | 168. | | 205.5 |
| 3-Chloropropene | ND | 41.1 | ND | 128. | | 205.5 |
| 4-Ethyltoluene | ND | 41.1 | ND | 202. | | 205.5 |
| Acetone | 139 | 103 | 330 | 244 | | 205.5 |
| Benzene | ND | 41.1 | ND | 131. | | 205.5 |
| Benzyl chloride | ND | 41.1 | ND | 213. | | 205.5 |
| Bromodichloromethane | ND | 41.1 | ND | 275. | | 205.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-06 D
Client ID: RETAIL B NORTHEAST-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:25
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 41.1 | ND | 424. | | 205.5 |
| Bromomethane | ND | 41.1 | ND | 159. | | 205.5 |
| Carbon disulfide | ND | 41.1 | ND | 128. | | 205.5 |
| Carbon tetrachloride | ND | 41.1 | ND | 258. | | 205.5 |
| Chlorobenzene | ND | 41.1 | ND | 189. | | 205.5 |
| Chloroethane | ND | 41.1 | ND | 108. | | 205.5 |
| Chloroform | ND | 41.1 | ND | 200. | | 205.5 |
| Chloromethane | ND | 41.1 | ND | 84.8 | | 205.5 |
| cis-1,2-Dichloroethene | ND | 41.1 | ND | 163. | | 205.5 |
| cis-1,3-Dichloropropene | ND | 41.1 | ND | 186. | | 205.5 |
| Cyclohexane | ND | 41.1 | ND | 141. | | 205.5 |
| Dibromochloromethane | ND | 41.1 | ND | 350. | | 205.5 |
| Dichlorodifluoromethane | ND | 41.1 | ND | 203. | | 205.5 |
| Ethanol | ND | 514. | ND | 967. | | 205.5 |
| Ethyl Acetate | ND | 103. | ND | 370. | | 205.5 |
| Ethylbenzene | ND | 41.1 | ND | 178. | | 205.5 |
| Freon-113 | ND | 41.1 | ND | 315. | | 205.5 |
| Freon-114 | ND | 41.1 | ND | 287. | | 205.5 |
| Hexachlorobutadiene | ND | 41.1 | ND | 438. | | 205.5 |
| Isopropanol | ND | 103 | ND | 252 | | 205.5 |
| Methylene chloride | ND | 103. | ND | 357. | | 205.5 |
| 4-Methyl-2-pentanone | ND | 41.1 | ND | 168. | | 205.5 |
| Methyl tert butyl ether | ND | 41.1 | ND | 148. | | 205.5 |
| p/m-Xylene | ND | 82.2 | ND | 357. | | 205.5 |
| o-Xylene | ND | 41.1 | ND | 178. | | 205.5 |
| Heptane | ND | 41.1 | ND | 168. | | 205.5 |
| n-Hexane | ND | 41.1 | ND | 145. | | 205.5 |
| Propylene | ND | 41.1 | ND | 70.7 | | 205.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-06 D
Client ID: RETAIL B NORTHEAST-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:25
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 41.1 | ND | 175. | | 205.5 |
| Tetrachloroethene | ND | 41.1 | ND | 278. | | 205.5 |
| Tetrahydrofuran | 3710 | 41.1 | 10900 | 121 | | 205.5 |
| Toluene | ND | 41.1 | ND | 155. | | 205.5 |
| trans-1,2-Dichloroethene | ND | 41.1 | ND | 163. | | 205.5 |
| trans-1,3-Dichloropropene | ND | 41.1 | ND | 186. | | 205.5 |
| Trichloroethene | ND | 41.1 | ND | 221. | | 205.5 |
| Trichlorofluoromethane | ND | 41.1 | ND | 231. | | 205.5 |
| Vinyl acetate | ND | 41.1 | ND | 144. | | 205.5 |
| Vinyl bromide | ND | 41.1 | ND | 180. | | 205.5 |
| Vinyl chloride | ND | 41.1 | ND | 105. | | 205.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-07 D
Client ID: RETAIL A NORTH-A1
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/09/09 02:20
Analyst: RY

Date Collected: 07/01/09 16:40
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.00 | ND | 5.45 | | 5 |
| 1,1,2,2-Tetrachloroethane | ND | 1.00 | ND | 6.86 | | 5 |
| 1,1,2-Trichloroethane | ND | 1.00 | ND | 5.45 | | 5 |
| 1,1-Dichloroethane | ND | 1.00 | ND | 4.04 | | 5 |
| 1,1-Dichloroethene | ND | 1.00 | ND | 3.96 | | 5 |
| 1,2,4-Trichlorobenzene | ND | 1.00 | ND | 7.42 | | 5 |
| 1,2,4-Trimethylbenzene | ND | 1.00 | ND | 4.91 | | 5 |
| 1,2-Dibromoethane | ND | 1.00 | ND | 7.68 | | 5 |
| 1,2-Dichlorobenzene | ND | 1.00 | ND | 6.01 | | 5 |
| 1,2-Dichloroethane | ND | 1.00 | ND | 4.04 | | 5 |
| 1,2-Dichloropropane | ND | 1.00 | ND | 4.62 | | 5 |
| 1,3,5-Trimethybenzene | ND | 1.00 | ND | 4.91 | | 5 |
| 1,3-Butadiene | ND | 1.00 | ND | 2.21 | | 5 |
| 1,3-Dichlorobenzene | ND | 1.00 | ND | 6.01 | | 5 |
| 1,4-Dichlorobenzene | ND | 1.00 | ND | 6.01 | | 5 |
| 1,4-Dioxane | ND | 1.00 | ND | 3.60 | | 5 |
| 2,2,4-Trimethylpentane | ND | 1.00 | ND | 4.67 | | 5 |
| 2-Butanone | 31.7 | 1.00 | 93.3 | 2.95 | | 5 |
| 2-Hexanone | ND | 1.00 | ND | 4.09 | | 5 |
| 3-Chloropropene | ND | 1.00 | ND | 3.13 | | 5 |
| 4-Ethyltoluene | ND | 1.00 | ND | 4.91 | | 5 |
| Acetone | ND | 2.50 | ND | 5.93 | | 5 |
| Benzene | 9.38 | 1.00 | 30.0 | 3.19 | | 5 |
| Benzyl chloride | ND | 1.00 | ND | 5.17 | | 5 |
| Bromodichloromethane | ND | 1.00 | ND | 6.70 | | 5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-07 D
Client ID: RETAIL A NORTH-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:40
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 1.00 | ND | 10.3 | | 5 |
| Bromomethane | ND | 1.00 | ND | 3.88 | | 5 |
| Carbon disulfide | ND | 1.00 | ND | 3.11 | | 5 |
| Carbon tetrachloride | ND | 1.00 | ND | 6.29 | | 5 |
| Chlorobenzene | ND | 1.00 | ND | 4.60 | | 5 |
| Chloroethane | 1.34 | 1.00 | 3.53 | 2.64 | | 5 |
| Chloroform | 1.40 | 1.00 | 6.86 | 4.88 | | 5 |
| Chloromethane | ND | 1.00 | ND | 2.06 | | 5 |
| cis-1,2-Dichloroethene | ND | 1.00 | ND | 3.96 | | 5 |
| cis-1,3-Dichloropropene | ND | 1.00 | ND | 4.53 | | 5 |
| Cyclohexane | 81.7 | 1.00 | 281 | 3.44 | | 5 |
| Dibromochloromethane | ND | 1.00 | ND | 8.51 | | 5 |
| Dichlorodifluoromethane | ND | 1.00 | ND | 4.94 | | 5 |
| Ethanol | 17.1 | 12.5 | 32.2 | 23.5 | | 5 |
| Ethyl Acetate | ND | 2.50 | ND | 9.00 | | 5 |
| Ethylbenzene | 1.51 | 1.00 | 6.56 | 4.34 | | 5 |
| Freon-113 | ND | 1.00 | ND | 7.66 | | 5 |
| Freon-114 | ND | 1.00 | ND | 6.98 | | 5 |
| Hexachlorobutadiene | ND | 1.00 | ND | 10.6 | | 5 |
| Isopropanol | 6.65 | 2.50 | 16.3 | 6.14 | | 5 |
| Methylene chloride | ND | 2.50 | ND | 8.68 | | 5 |
| 4-Methyl-2-pentanone | ND | 1.00 | ND | 4.09 | | 5 |
| Methyl tert butyl ether | ND | 1.00 | ND | 3.60 | | 5 |
| p/m-Xylene | 3.68 | 2.00 | 16.0 | 8.68 | | 5 |
| o-Xylene | 1.39 | 1.00 | 6.05 | 4.34 | | 5 |
| Heptane | 96.0 | 1.00 | 393 | 4.10 | | 5 |
| n-Hexane | 248 | 1.00 | 873 | 3.52 | | 5 |
| Propylene | 115 | 1.00 | 198 | 1.72 | | 5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-07 D
Client ID: RETAIL A NORTH-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:40
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 1.00 | ND | 4.26 | | 5 |
| Tetrachloroethene | ND | 1.00 | ND | 6.78 | | 5 |
| Tetrahydrofuran | 125 | 1.00 | 369 | 2.95 | | 5 |
| Toluene | 31.3 | 1.00 | 118 | 3.76 | | 5 |
| trans-1,2-Dichloroethene | ND | 1.00 | ND | 3.96 | | 5 |
| trans-1,3-Dichloropropene | ND | 1.00 | ND | 4.53 | | 5 |
| Trichloroethene | 24.8 | 1.00 | 133 | 5.37 | | 5 |
| Trichlorofluoromethane | ND | 1.00 | ND | 5.61 | | 5 |
| Vinyl acetate | ND | 1.00 | ND | 3.52 | | 5 |
| Vinyl bromide | ND | 1.00 | ND | 4.37 | | 5 |
| Vinyl chloride | 6.28 | 1.00 | 16.0 | 2.55 | | 5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-08 D
Client ID: RETAIL A NORTH-B2
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/09/09 02:58
Analyst: RY

Date Collected: 07/01/09 16:40
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.500 | ND | 2.72 | | 2.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.500 | ND | 3.43 | | 2.5 |
| 1,1,2-Trichloroethane | ND | 0.500 | ND | 2.72 | | 2.5 |
| 1,1-Dichloroethane | ND | 0.500 | ND | 2.02 | | 2.5 |
| 1,1-Dichloroethene | ND | 0.500 | ND | 1.98 | | 2.5 |
| 1,2,4-Trichlorobenzene | ND | 0.500 | ND | 3.71 | | 2.5 |
| 1,2,4-Trimethylbenzene | ND | 0.500 | ND | 2.46 | | 2.5 |
| 1,2-Dibromoethane | ND | 0.500 | ND | 3.84 | | 2.5 |
| 1,2-Dichlorobenzene | ND | 0.500 | ND | 3.00 | | 2.5 |
| 1,2-Dichloroethane | ND | 0.500 | ND | 2.02 | | 2.5 |
| 1,2-Dichloropropane | ND | 0.500 | ND | 2.31 | | 2.5 |
| 1,3,5-Trimethybenzene | ND | 0.500 | ND | 2.46 | | 2.5 |
| 1,3-Butadiene | 0.510 | 0.500 | 1.13 | 1.10 | | 2.5 |
| 1,3-Dichlorobenzene | ND | 0.500 | ND | 3.00 | | 2.5 |
| 1,4-Dichlorobenzene | ND | 0.500 | ND | 3.00 | | 2.5 |
| 1,4-Dioxane | ND | 0.500 | ND | 1.80 | | 2.5 |
| 2,2,4-Trimethylpentane | ND | 0.500 | ND | 2.33 | | 2.5 |
| 2-Butanone | 16.0 | 0.500 | 47.2 | 1.47 | | 2.5 |
| 2-Hexanone | 0.754 | 0.500 | 3.09 | 2.05 | | 2.5 |
| 3-Chloropropene | ND | 0.500 | ND | 1.56 | | 2.5 |
| 4-Ethyltoluene | ND | 0.500 | ND | 2.46 | | 2.5 |
| Acetone | 32.4 | 1.25 | 77.0 | 2.97 | | 2.5 |
| Benzene | ND | 0.500 | ND | 1.60 | | 2.5 |
| Benzyl chloride | ND | 0.500 | ND | 2.59 | | 2.5 |
| Bromodichloromethane | ND | 0.500 | ND | 3.35 | | 2.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-08 D
Client ID: RETAIL A NORTH-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:40
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 0.500 | ND | 5.16 | | 2.5 |
| Bromomethane | ND | 0.500 | ND | 1.94 | | 2.5 |
| Carbon disulfide | ND | 0.500 | ND | 1.56 | | 2.5 |
| Carbon tetrachloride | ND | 0.500 | ND | 3.14 | | 2.5 |
| Chlorobenzene | ND | 0.500 | ND | 2.30 | | 2.5 |
| Chloroethane | ND | 0.500 | ND | 1.32 | | 2.5 |
| Chloroform | ND | 0.500 | ND | 2.44 | | 2.5 |
| Chloromethane | ND | 0.500 | ND | 1.03 | | 2.5 |
| cis-1,2-Dichloroethene | ND | 0.500 | ND | 1.98 | | 2.5 |
| cis-1,3-Dichloropropene | ND | 0.500 | ND | 2.27 | | 2.5 |
| Cyclohexane | ND | 0.500 | ND | 1.72 | | 2.5 |
| Dibromochloromethane | ND | 0.500 | ND | 4.26 | | 2.5 |
| Dichlorodifluoromethane | 0.575 | 0.500 | 2.84 | 2.47 | | 2.5 |
| Ethanol | 7.35 | 6.25 | 13.8 | 11.8 | | 2.5 |
| Ethyl Acetate | ND | 1.25 | ND | 4.50 | | 2.5 |
| Ethylbenzene | ND | 0.500 | ND | 2.17 | | 2.5 |
| Freon-113 | ND | 0.500 | ND | 3.83 | | 2.5 |
| Freon-114 | ND | 0.500 | ND | 3.49 | | 2.5 |
| Hexachlorobutadiene | ND | 0.500 | ND | 5.33 | | 2.5 |
| Isopropanol | 1.88 | 1.25 | 4.60 | 3.07 | | 2.5 |
| Methylene chloride | ND | 1.25 | ND | 4.34 | | 2.5 |
| 4-Methyl-2-pentanone | ND | 0.500 | ND | 2.05 | | 2.5 |
| Methyl tert butyl ether | ND | 0.500 | ND | 1.80 | | 2.5 |
| p/m-Xylene | 1.18 | 1.00 | 5.11 | 4.34 | | 2.5 |
| o-Xylene | ND | 0.500 | ND | 2.17 | | 2.5 |
| Heptane | ND | 0.500 | ND | 2.05 | | 2.5 |
| n-Hexane | ND | 0.500 | ND | 1.76 | | 2.5 |
| Propylene | ND | 0.500 | ND | 0.860 | | 2.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908991-08 D
Client ID: RETAIL A NORTH-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:40
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 0.500 | ND | 2.13 | | 2.5 |
| Tetrachloroethene | ND | 0.500 | ND | 3.39 | | 2.5 |
| Tetrahydrofuran | 200 | 0.500 | 589 | 1.47 | | 2.5 |
| Toluene | 1.10 | 0.500 | 4.13 | 1.88 | | 2.5 |
| trans-1,2-Dichloroethene | ND | 0.500 | ND | 1.98 | | 2.5 |
| trans-1,3-Dichloropropene | ND | 0.500 | ND | 2.27 | | 2.5 |
| Trichloroethene | 1.00 | 0.500 | 5.40 | 2.68 | | 2.5 |
| Trichlorofluoromethane | ND | 0.500 | ND | 2.81 | | 2.5 |
| Vinyl acetate | ND | 0.500 | ND | 1.76 | | 2.5 |
| Vinyl bromide | ND | 0.500 | ND | 2.18 | | 2.5 |
| Vinyl chloride | ND | 0.500 | ND | 1.28 | | 2.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/08/09 17:29

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab for sample(s): 01-08 Batch: WG370013-4 | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.200 | ND | 1.09 | | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 0.200 | ND | 1.37 | | 1 |
| 1,1,2-Trichloroethane | ND | 0.200 | ND | 1.09 | | 1 |
| 1,1-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,1-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| 1,2,4-Trichlorobenzene | ND | 0.200 | ND | 1.48 | | 1 |
| 1,2,4-Trimethylbenzene | ND | 0.200 | ND | 0.982 | | 1 |
| 1,2-Dibromoethane | ND | 0.200 | ND | 1.54 | | 1 |
| 1,2-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,2-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,2-Dichloropropane | ND | 0.200 | ND | 0.924 | | 1 |
| 1,3,5-Trimethybenzene | ND | 0.200 | ND | 0.982 | | 1 |
| 1,3-Butadiene | ND | 0.200 | ND | 0.442 | | 1 |
| 1,3-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dioxane | ND | 0.200 | ND | 0.720 | | 1 |
| 2,2,4-Trimethylpentane | ND | 0.200 | ND | 0.934 | | 1 |
| 2-Butanone | ND | 0.200 | ND | 0.589 | | 1 |
| 2-Hexanone | ND | 0.200 | ND | 0.819 | | 1 |
| 3-Chloropropene | ND | 0.200 | ND | 0.626 | | 1 |
| 4-Ethyltoluene | ND | 0.200 | ND | 0.982 | | 1 |
| Acetone | ND | 0.500 | ND | 1.19 | | 1 |
| Benzene | ND | 0.200 | ND | 0.638 | | 1 |
| Benzyl chloride | ND | 0.200 | ND | 1.03 | | 1 |
| Bromodichloromethane | ND | 0.200 | ND | 1.34 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/08/09 17:29

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab for sample(s): 01-08 Batch: WG370013-4 | | | | | | |
| Bromoform | ND | 0.200 | ND | 2.06 | | 1 |
| Bromomethane | ND | 0.200 | ND | 0.776 | | 1 |
| Carbon disulfide | ND | 0.200 | ND | 0.622 | | 1 |
| Carbon tetrachloride | ND | 0.200 | ND | 1.26 | | 1 |
| Chlorobenzene | ND | 0.200 | ND | 0.920 | | 1 |
| Chloroethane | ND | 0.200 | ND | 0.527 | | 1 |
| Chloroform | ND | 0.200 | ND | 0.976 | | 1 |
| Chloromethane | ND | 0.200 | ND | 0.413 | | 1 |
| cis-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| cis-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Cyclohexane | ND | 0.200 | ND | 0.688 | | 1 |
| Dibromochloromethane | ND | 0.200 | ND | 1.70 | | 1 |
| Dichlorodifluoromethane | ND | 0.200 | ND | 0.988 | | 1 |
| Ethanol | ND | 2.50 | ND | 4.71 | | 1 |
| Ethyl Acetate | ND | 0.500 | ND | 1.80 | | 1 |
| Ethylbenzene | ND | 0.200 | ND | 0.868 | | 1 |
| Freon-113 | ND | 0.200 | ND | 1.53 | | 1 |
| Freon-114 | ND | 0.200 | ND | 1.40 | | 1 |
| Hexachlorobutadiene | ND | 0.200 | ND | 2.13 | | 1 |
| Isopropanol | ND | 0.500 | ND | 1.23 | | 1 |
| Methylene chloride | ND | 0.500 | ND | 1.74 | | 1 |
| 4-Methyl-2-pentanone | ND | 0.200 | ND | 0.819 | | 1 |
| Methyl tert butyl ether | ND | 0.200 | ND | 0.720 | | 1 |
| p/m-Xylene | ND | 0.400 | ND | 1.74 | | 1 |
| o-Xylene | ND | 0.200 | ND | 0.868 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908991
**Report Date:** 07/13/09

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/08/09 17:29

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab for sample(s): 01-08 Batch: WG370013-4 | | | | | | |
| Heptane | ND | 0.200 | ND | 0.819 | | 1 |
| n-Hexane | ND | 0.200 | ND | 0.704 | | 1 |
| Propylene | ND | 0.200 | ND | 0.344 | | 1 |
| Styrene | ND | 0.200 | ND | 0.851 | | 1 |
| Tetrachloroethene | ND | 0.200 | ND | 1.36 | | 1 |
| Tetrahydrofuran | ND | 0.200 | ND | 0.589 | | 1 |
| Toluene | ND | 0.200 | ND | 0.753 | | 1 |
| trans-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| trans-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Trichloroethene | ND | 0.200 | ND | 1.07 | | 1 |
| Trichlorofluoromethane | ND | 0.200 | ND | 1.12 | | 1 |
| Vinyl acetate | ND | 0.200 | ND | 0.704 | | 1 |
| Vinyl bromide | ND | 0.200 | ND | 0.874 | | 1 |
| Vinyl chloride | ND | 0.200 | ND | 0.511 | | 1 |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** ELMWAY FARMS

**Project Number:** 16356.85

**Lab Number:** L0908991

**Report Date:** 07/13/09

| Parameter | LCS %Recovery | LCSD %Recovery | %Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-08 Batch: WG370013-3 | | | | | |
| 1,1,1-Trichloroethane | 109 | - | 70-130 | - | |
| 1,1,2,2-Tetrachloroethane | 115 | - | 70-130 | - | |
| 1,1,2-Trichloroethane | 103 | - | 70-130 | - | |
| 1,1-Dichloroethane | 116 | - | 70-130 | - | |
| 1,1-Dichloroethene | 108 | - | 70-130 | - | |
| 1,2,4-Trichlorobenzene | 118 | - | 70-130 | - | |
| 1,2,4-Trimethylbenzene | 119 | - | 70-130 | - | |
| 1,2-Dibromoethane | 108 | - | 70-130 | - | |
| 1,2-Dichlorobenzene | 118 | - | 70-130 | - | |
| 1,2-Dichloroethane | **134** | - | 70-130 | - | |
| 1,2-Dichloropropane | 106 | - | 70-130 | - | |
| 1,3,5-Trimethylbenzene | 118 | - | 70-130 | - | |
| 1,3-Butadiene | 98 | - | 70-130 | - | |
| 1,3-Dichlorobenzene | 118 | - | 70-130 | - | |
| 1,4-Dichlorobenzene | 116 | - | 70-130 | - | |
| 1,4-Dioxane | 110 | - | 70-130 | - | |
| 2,2,4-Trimethylpentane | 96 | - | 70-130 | - | |
| 2-Butanone | 108 | - | 70-130 | - | |
| 2-Hexanone | 102 | - | 70-130 | - | |
| 3-Chloropropene | 93 | - | 70-130 | - | |
| 4-Ethyltoluene | 116 | - | 70-130 | - | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** ELMWAY FARMS

**Project Number:** 16356.85

**Lab Number:** L0908991

**Report Date:** 07/13/09

| Parameter | LCS %Recovery | LCSD %Recovery | %Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-08 Batch: WG370013-3 | | | | | |
| Acetone | 108 | - | 70-130 | - | |
| Benzene | 102 | - | 70-130 | - | |
| Benzyl chloride | 113 | - | 70-130 | - | |
| Bromodichloromethane | 107 | - | 70-130 | - | |
| Bromoform | 105 | - | 70-130 | - | |
| Bromomethane | 85 | - | 70-130 | - | |
| Carbon disulfide | 90 | - | 70-130 | - | |
| Carbon tetrachloride | 106 | - | 70-130 | - | |
| Chlorobenzene | 118 | - | 70-130 | - | |
| Chloroethane | 91 | - | 70-130 | - | |
| Chloroform | 120 | - | 70-130 | - | |
| Chloromethane | 97 | - | 70-130 | - | |
| cis-1,2-Dichloroethene | 113 | - | 70-130 | - | |
| cis-1,3-Dichloropropene | 96 | - | 70-130 | - | |
| Cyclohexane | 88 | - | 70-130 | - | |
| Dibromochloromethane | 109 | - | 70-130 | - | |
| Dichlorodifluoromethane | 111 | - | 70-130 | - | |
| Ethyl Alcohol | 96 | - | 70-130 | - | |
| Ethyl Acetate | 126 | - | 70-130 | - | |
| Ethylbenzene | 120 | - | 70-130 | - | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 113 | - | 70-130 | - | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** ELMWAY FARMS

**Project Number:** 16356.85

**Lab Number:** L0908991

**Report Date:** 07/13/09

| Parameter | LCS %Recovery | LCSD %Recovery | %Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-08 Batch: WG370013-3 | | | | | |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | 109 | - | 70-130 | - | |
| Hexachlorobutadiene | 124 | - | 70-130 | - | |
| iso-Propyl Alcohol | 102 | - | 70-130 | - | |
| Methylene chloride | 97 | - | 70-130 | - | |
| 4-Methyl-2-pentanone | 98 | - | 70-130 | - | |
| Methyl tert butyl ether | 122 | - | 70-130 | - | |
| p/m-Xylene | 120 | - | 70-130 | - | |
| o-Xylene | 122 | - | 70-130 | - | |
| Heptane | 87 | - | 70-130 | - | |
| n-Hexane | 86 | - | 70-130 | - | |
| Propylene | 88 | - | 70-130 | - | |
| Styrene | 117 | - | 70-130 | - | |
| Tetrachloroethene | 114 | - | 70-130 | - | |
| Tetrahydrofuran | 111 | - | 70-130 | - | |
| Toluene | 114 | - | 70-130 | - | |
| trans-1,2-Dichloroethene | 104 | - | 70-130 | - | |
| trans-1,3-Dichloropropene | 82 | - | 70-130 | - | |
| Trichloroethene | 101 | - | 70-130 | - | |
| Trichlorofluoromethane | 116 | - | 70-130 | - | |
| Vinyl acetate | 123 | - | 70-130 | - | |
| Vinyl bromide | 105 | - | 70-130 | - | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** ELMWAY FARMS

**Project Number:** 16356.85

**Lab Number:** L0908991

**Report Date:** 07/13/09

| Parameter | LCS %Recovery | LCSD %Recovery | %Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-08 Batch: WG370013-3 | | | | | |
| Vinyl chloride | 98 | - | 70-130 | - | |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908991
**Report Date:** 07/13/09

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG370013-5 QC Sample: L0908989-01 Client ID: DUP Sample | | | | | |
| 1,1,1-Trichloroethane | ND | ND | ppbV | NC | 25 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ppbV | NC | 25 |
| 1,1,2-Trichloroethane | ND | ND | ppbV | NC | 25 |
| 1,1-Dichloroethane | ND | ND | ppbV | NC | 25 |
| 1,1-Dichloroethene | ND | ND | ppbV | NC | 25 |
| 1,2,4-Trichlorobenzene | ND | ND | ppbV | NC | 25 |
| 1,2,4-Trimethylbenzene | ND | ND | ppbV | NC | 25 |
| 1,2-Dibromoethane | ND | ND | ppbV | NC | 25 |
| 1,2-Dichlorobenzene | ND | ND | ppbV | NC | 25 |
| 1,2-Dichloroethane | ND | ND | ppbV | NC | 25 |
| 1,2-Dichloropropane | ND | ND | ppbV | NC | 25 |
| 1,3,5-Trimethybenzene | ND | ND | ppbV | NC | 25 |
| 1,3-Butadiene | ND | ND | ppbV | NC | 25 |
| 1,3-Dichlorobenzene | ND | ND | ppbV | NC | 25 |
| 1,4-Dichlorobenzene | ND | ND | ppbV | NC | 25 |
| 1,4-Dioxane | ND | ND | ppbV | NC | 25 |
| 2,2,4-Trimethylpentane | ND | ND | ppbV | NC | 25 |
| 2-Butanone | 12.2 | 12.4 | ppbV | 2 | 25 |
| 2-Hexanone | ND | ND | ppbV | NC | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908991
**Report Date:** 07/13/09

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG370013-5 QC Sample: L0908989-01 Client ID: DUP Sample | | | | | |
| 3-Chloropropene | ND | ND | ppbV | NC | 25 |
| 4-Ethyltoluene | ND | ND | ppbV | NC | 25 |
| Acetone | ND | ND | ppbV | NC | 25 |
| Benzene | 4.88 | 4.69 | ppbV | 4 | 25 |
| Benzyl chloride | ND | ND | ppbV | NC | 25 |
| Bromodichloromethane | ND | ND | ppbV | NC | 25 |
| Bromoform | ND | ND | ppbV | NC | 25 |
| Bromomethane | ND | ND | ppbV | NC | 25 |
| Carbon disulfide | ND | ND | ppbV | NC | 25 |
| Carbon tetrachloride | ND | ND | ppbV | NC | 25 |
| Chlorobenzene | ND | ND | ppbV | NC | 25 |
| Chloroethane | ND | ND | ppbV | NC | 25 |
| Chloroform | ND | ND | ppbV | NC | 25 |
| Chloromethane | ND | ND | ppbV | NC | 25 |
| cis-1,2-Dichloroethene | ND | ND | ppbV | NC | 25 |
| cis-1,3-Dichloropropene | ND | ND | ppbV | NC | 25 |
| Cyclohexane | 45.1 | 44.5 | ppbV | 1 | 25 |
| Dibromochloromethane | ND | ND | ppbV | NC | 25 |
| Dichlorodifluoromethane | ND | ND | ppbV | NC | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908991
**Report Date:** 07/13/09

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG370013-5 QC Sample: L0908989-01 Client ID: DUP Sample | | | | | |
| Ethanol | ND | ND | ppbV | NC | 25 |
| Ethyl Acetate | ND | ND | ppbV | NC | 25 |
| Ethylbenzene | ND | ND | ppbV | NC | 25 |
| Freon-113 | ND | ND | ppbV | NC | 25 |
| Freon-114 | ND | ND | ppbV | NC | 25 |
| Hexachlorobutadiene | ND | ND | ppbV | NC | 25 |
| Isopropanol | 12.0 | 11.6 | ppbV | 3 | 25 |
| Methylene chloride | ND | ND | ppbV | NC | 25 |
| 4-Methyl-2-pentanone | ND | ND | ppbV | NC | 25 |
| Methyl tert butyl ether | ND | ND | ppbV | NC | 25 |
| p/m-Xylene | ND | ND | ppbV | NC | 25 |
| o-Xylene | ND | ND | ppbV | NC | 25 |
| Heptane | 56.5 | 56.7 | ppbV | 0 | 25 |
| n-Hexane | 130 | 132 | ppbV | 2 | 25 |
| Propylene | 85.0 | 87.6 | ppbV | 3 | 25 |
| Styrene | ND | ND | ppbV | NC | 25 |
| Tetrachloroethene | ND | ND | ppbV | NC | 25 |
| Tetrahydrofuran | 11.3 | 12.2 | ppbV | 8 | 25 |
| Toluene | 13.1 | 13.6 | ppbV | 4 | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908991
**Report Date:** 07/13/09

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG370013-5 QC Sample: L0908989-01 Client ID: DUP Sample | | | | | |
| trans-1,2-Dichloroethene | ND | ND | ppbV | NC | 25 |
| trans-1,3-Dichloropropene | ND | ND | ppbV | NC | 25 |
| Trichloroethene | 2.78 | 3.07 | ppbV | 10 | 25 |
| Trichlorofluoromethane | ND | ND | ppbV | NC | 25 |
| Vinyl acetate | ND | ND | ppbV | NC | 25 |
| Vinyl bromide | ND | ND | ppbV | NC | 25 |
| Vinyl chloride | 9.80 | 9.92 | ppbV | 1 | 25 |

**Project Name:** ELMWAY FARMS **Lab Number:** L0908991

**Project Number:** 16356.85 **Report Date:** 07/13/09

## Canister and Flow Controller Information

| Samplenum | Client ID | Media ID | Media Type | Cleaning Batch ID | Initial Pressure (in. Hg) | Pressure on Receipt (in. Hg) | Flow Out mL/min | Flow In mL/min | % RSD |
|---|---|---|---|---|---|---|---|---|---|
| L0908991-01 | RETAIL B NORTHWEST-A1 | 0120 | #16 AMB | | - | - | 4.8 | 4.7 | 2 |
| L0908991-01 | RETAIL B NORTHWEST-A1 | 398 | 2.7L Can | I0907844 | -29.8 | -0.5 | - | - | - |
| L0908991-02 | RETAIL B NORTHWEST-B2 | 0004 | #16 AMB | | - | - | 4.9 | 4.8 | 2 |
| L0908991-02 | RETAIL B NORTHWEST-B2 | 138 | 2.7L Can | I0907844 | -29.8 | -2.4 | - | - | - |
| L0908991-03 | RETAIL B NORTHMID-A1 | 0131 | #16 SV | | - | - | 4.8 | 4.6 | 4 |
| L0908991-03 | RETAIL B NORTHMID-A1 | 139 | 2.7L Can | I0906767 | -29.8 | -1.2 | - | - | - |
| L0908991-04 | RETAIL B NORTHMID-B2 | 0122 | #16 AMB | | - | - | 4.7 | 4.9 | 4 |
| L0908991-04 | RETAIL B NORTHMID-B2 | 336 | 2.7L Can | I0907844 | -29.8 | -1.3 | - | - | - |
| L0908991-05 | RETAIL B NORTHEAST-A1 | 0336 | #30 SV | | - | - | 4.9 | 5.8 | 17 |
| L0908991-05 | RETAIL B NORTHEAST-A1 | 225 | 2.7L Can | I0907754 | -29.8 | 0.4 | - | - | - |
| L0908991-06 | RETAIL B NORTHEAST-B2 | 0434 | #16 AMB | | - | - | 4.7 | 4.3 | 9 |
| L0908991-06 | RETAIL B NORTHEAST-B2 | 237 | 2.7L Can | I0907657 | -29.8 | -2.5 | - | - | - |
| L0908991-07 | RETAIL A NORTH-A1 | 0435 | #16 AMB | | - | - | 5.0 | 5.4 | 8 |
| L0908991-07 | RETAIL A NORTH-A1 | 449 | 2.7L Can | I0907844 | -29.8 | 0.3 | - | - | - |
| L0908991-08 | RETAIL A NORTH-B2 | 0324 | #20 SV | | - | - | 4.8 | 5.0 | 4 |
| L0908991-08 | RETAIL A NORTH-B2 | 518 | 2.7L Can | I0907844 | -29.8 | 0.1 | - | - | - |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908991
**Report Date:** 07/13/09

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

### Cooler Information

| Cooler | Custody Seal |
|---|---|
| N/A | Present/Intact |

### Container Information

| Container ID | Container Type | Cooler | pH | Temp deg C | Pres | Seal | Analysis |
|---|---|---|---|---|---|---|---|
| L0908991-01A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908991-02A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908991-03A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908991-04A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908991-05A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908991-06A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908991-07A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908991-08A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |

*Hold days indicated by values in parentheses

| | | | |
|---|---|---|---|
| **Project Name:** | ELMWAY FARMS | **Lab Number:** | L0908991 |
| **Project Number:** | 16356.85 | **Report Date:** | 07/13/09 |

## GLOSSARY

***Acronyms***

| | |
|---|---|
| EPA | · Environmental Protection Agency. |
| LCS | · Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. |
| LCSD | · Laboratory Control Sample Duplicate: Refer to LCS. |
| MS | · Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. |
| MSD | · Matrix Spike Sample Duplicate: Refer to MS. |
| NA | · Not Applicable. |
| NC | · Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit. |
| ND | · Not detected at the reported detection limit for the sample. |
| NI | · Not Ignitable. |
| RDL | · Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. |
| RPD | · Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report. |

***Terms***

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

***Data Qualifiers***

| | |
|---|---|
| ***** | - The batch duplicate RPD exceeds the acceptance criteria. This flag is not applicable when the sample concentrations are less than 5x the RDL. (Metals only.) |
| **A** | - Spectra identified as "Aldol Condensation Product". |
| **B** | - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte. |
| **D** | - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte. |
| **E** | - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument. |
| **H** | - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection. |
| **N** | - The matrix spike recovery exceeds the acceptance criteria. This flag is not applicable when the sample concentration is greater than 4x the spike added. (Metals only.) |
| **P** | - The RPD between the results for the two columns exceeds the method-specified criteria. |
| **R** | - Analytical results are from sample re-analysis. |
| **RE** | - Analytical results are from sample re-extraction. |
| **J** | - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs). |

*Report Format:* Data Usability Report

| | | | |
|---|---|---|---|
| **Project Name:** | ELMWAY FARMS | **Lab Number:** | L0908991 |
| **Project Number:** | 16356.85 | **Report Date:** | 07/13/09 |

## REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

# Certificate/Approval Program Summary

Last revised June 17, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

**Connecticut Department of Public Health** Certificate/Lab ID: PH-0141.

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

**Florida Department of Health** Certificate/Lab ID: E87814. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, 4500NH3-F, EPA 120.1, SM2510B, 2340B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, 420.1, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

**Louisiana Department of Environmental Quality** Certificate/Lab ID: 03090. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

**Maine Department of Human Services** Certificate/Lab ID: MA0030.

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

**Massachusetts Department of Environmental Protection** Certificate/Lab ID: M-MA030.

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

**New Hampshire Department of Environmental Services** Certificate/Lab ID: 2206. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection** Certificate/Lab ID: MA015. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection** Certificate/Lab ID: 68-02089. ***NELAP Accredited.***

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. ***NELAP Accredited via LA-DEQ.***

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. ***NELAP Accredited.***

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7471. Organic Parameters: EPA 8015, 8270.)

**U.S. Army Corps of Engineers**

# AIR ANALYSIS

PAGE_____ OF_____

**CHAIN OF CUSTODY**

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

07130913:22

**Date Rec'd in Lab:**

**ALPHA Job #:** L0908991

## Client Information

Client: JDN Realty
Address:
Phone:
Fax:
Email:
☐ These samples have been previously analyzed by Alpha

## Project Information

Project Name: Elmway Farms
Project Location: Norwood, MA
Project #: 16356.85
Project Manager: Matt Smith
ALPHA Quote #:

## Turn-Around Time

☒ Standard ☐ RUSH *(only confirmed if pre-approved!)*

**Date Due:** 7/8/09 **Time:** 1700hrs

## Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker: _____
*(Default based on Regulatory Criteria Indicated)*
Other Formats: _____
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: *(if different than Project Manager)*

## Billing Information

☐ Same as Client info PO #:
CTA

## Regulatory Requirements/Report Limits

| State/Fed | Program | Criteria |
|---|---|---|
| | | |
| | | |
| | | |

Other Project Specific Requirements/Comments:

**All Columns Below Must Be Filled Out**

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection Date | Collection Start Time | Collection End Time | Sample Matrix* | Sampler's Initials | Can Size | I D Can | I D - Flow Controller | ANALYSIS: TO-14A by TO-15 | TO-15 | TO-15 SIM | APH | FIXED GASES | TO-13A | TO-4 / TO-10 | Sample Comments (i.e. PID) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L0908991-1 | Retail B Northwest - A1 | 7/1/09 | 0743 | 1545 | SV | AKM | 2.7L | 398 | 0120 | X | | | | | | | |
| 2 | Retail B Northwest - B2 | | 0740 | 1545 | | | | 138 | 0004 | X | | | | | | | |
| 3 | Retail B Northmid - A1 | | 0759 | 1600 | | | | 139 | 0131 | X | | | | | | | |
| 4 | Retail B Northmid - B2 | | 0756 | 1600 | | | | 336 | 0122 | X | | | | | | | |
| 5 | Retail B Northeast - A1 | | 0825 | 1625 | | | | 225 | 0336 | X | | | | | | | |
| 6 | Retail B Northeast - B2 | | 0821 | 1625 | | | | 237 | 0434 | X | | | | | | | |
| 7 | Retail A North - A1 | | 0840 | 1640 | | | | 447 | 0435 | X | | | | | | | |
| 8 | Retail A North - B2 | ↓ | 0836 | 1640 | ↓ | ↓ | ↓ | 518 | 0324 | X | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

| Relinquished By: | Date/Time | Received By: | Date/Time: |
|---|---|---|---|
| | 7/2/2009 1300 | CONTAINERS SEE | 7/2/2009 1300 |
| | 7-6-09 | | 7/6/09 1310 |
| | | | 7/6/09 1820 |

Form No: 101-02 (rev.14-OCT-07)

# ANALYTICAL REPORT

| | |
|---|---|
| Lab Number: | L0908989 |
| Client: | GZA GeoEnvironmental, Inc.<br>1 Edgewater Drive<br>Norwood, MA 02062 |
| ATTN: | Matt Smith |
| Project Name: | ELMWAY FARMS |
| Project Number: | 16356.85 |
| Report Date: | 07/13/09 |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908989
**Report Date:** 07/13/09

| Alpha Sample ID | Client ID | Sample Location | Collection Date/Time |
|---|---|---|---|
| L0908989-01 | RETAIL A SOUTH-A1 | NORWOOD, MA | 07/01/09 17:05 |
| L0908989-02 | RETAIL A SOUTH-B2 | NORWOOD, MA | 07/01/09 17:05 |
| L0908989-03 | AMBIENT | NORWOOD, MA | 07/01/09 16:47 |
| L0908989-04 | EPA SAMPLE | NORWOOD, MA | 07/01/09 00:00 |

**Project Name:** ELMWAY FARMS **Lab Number:** L0908989
**Project Number:** 16356.85 **Report Date:** 07/13/09

## Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

---

Volatile Organics in Air (Low Level)

L0908989-01, -02 and WG370013-5 have elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.
L0908989-01 and WG370013-5: The presence of Acetone could not be determined in this sample due to non-target compounds interfering with the identification and quantification of this compound.

The WG370013-3 LCS recovery for 1,2-Dichloroethane (134%) is outside the 70%-130% acceptance limit. The LCS was within overall method allowances, therefore the analysis proceeded.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: 

Title: Technical Director/Representative Date: 07/13/09

# AIR

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-01 D
Client ID: RETAIL A SOUTH-A1
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/08/09 19:31
Analyst: RY

Date Collected: 07/01/09 17:05
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 2.00 | ND | 10.9 | | 10 |
| 1,1,2,2-Tetrachloroethane | ND | 2.00 | ND | 13.7 | | 10 |
| 1,1,2-Trichloroethane | ND | 2.00 | ND | 10.9 | | 10 |
| 1,1-Dichloroethane | ND | 2.00 | ND | 8.09 | | 10 |
| 1,1-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| 1,2,4-Trichlorobenzene | ND | 2.00 | ND | 14.8 | | 10 |
| 1,2,4-Trimethylbenzene | ND | 2.00 | ND | 9.82 | | 10 |
| 1,2-Dibromoethane | ND | 2.00 | ND | 15.4 | | 10 |
| 1,2-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,2-Dichloroethane | ND | 2.00 | ND | 8.09 | | 10 |
| 1,2-Dichloropropane | ND | 2.00 | ND | 9.24 | | 10 |
| 1,3,5-Trimethybenzene | ND | 2.00 | ND | 9.82 | | 10 |
| 1,3-Butadiene | ND | 2.00 | ND | 4.42 | | 10 |
| 1,3-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,4-Dichlorobenzene | ND | 2.00 | ND | 12.0 | | 10 |
| 1,4-Dioxane | ND | 2.00 | ND | 7.20 | | 10 |
| 2,2,4-Trimethylpentane | ND | 2.00 | ND | 9.34 | | 10 |
| 2-Butanone | 12.2 | 2.00 | 35.8 | 5.89 | | 10 |
| 2-Hexanone | ND | 2.00 | ND | 8.19 | | 10 |
| 3-Chloropropene | ND | 2.00 | ND | 6.26 | | 10 |
| 4-Ethyltoluene | ND | 2.00 | ND | 9.82 | | 10 |
| Acetone | ND | 5.00 | ND | 11.9 | | 10 |
| Benzene | 4.88 | 2.00 | 15.6 | 6.38 | | 10 |
| Benzyl chloride | ND | 2.00 | ND | 10.3 | | 10 |
| Bromodichloromethane | ND | 2.00 | ND | 13.4 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-01 D
Client ID: RETAIL A SOUTH-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 17:05
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 2.00 | ND | 20.6 | | 10 |
| Bromomethane | ND | 2.00 | ND | 7.76 | | 10 |
| Carbon disulfide | ND | 2.00 | ND | 6.22 | | 10 |
| Carbon tetrachloride | ND | 2.00 | ND | 12.6 | | 10 |
| Chlorobenzene | ND | 2.00 | ND | 9.20 | | 10 |
| Chloroethane | ND | 2.00 | ND | 5.27 | | 10 |
| Chloroform | ND | 2.00 | ND | 9.76 | | 10 |
| Chloromethane | ND | 2.00 | ND | 4.13 | | 10 |
| cis-1,2-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| cis-1,3-Dichloropropene | ND | 2.00 | ND | 9.07 | | 10 |
| Cyclohexane | 45.1 | 2.00 | 155 | 6.88 | | 10 |
| Dibromochloromethane | ND | 2.00 | ND | 17.0 | | 10 |
| Dichlorodifluoromethane | ND | 2.00 | ND | 9.88 | | 10 |
| Ethanol | ND | 25.0 | ND | 47.1 | | 10 |
| Ethyl Acetate | ND | 5.00 | ND | 18.0 | | 10 |
| Ethylbenzene | ND | 2.00 | ND | 8.68 | | 10 |
| Freon-113 | ND | 2.00 | ND | 15.3 | | 10 |
| Freon-114 | ND | 2.00 | ND | 14.0 | | 10 |
| Hexachlorobutadiene | ND | 2.00 | ND | 21.3 | | 10 |
| Isopropanol | 12.0 | 5.00 | 29.6 | 12.3 | | 10 |
| Methylene chloride | ND | 5.00 | ND | 17.4 | | 10 |
| 4-Methyl-2-pentanone | ND | 2.00 | ND | 8.19 | | 10 |
| Methyl tert butyl ether | ND | 2.00 | ND | 7.20 | | 10 |
| p/m-Xylene | ND | 4.00 | ND | 17.4 | | 10 |
| o-Xylene | ND | 2.00 | ND | 8.68 | | 10 |
| Heptane | 56.5 | 2.00 | 231 | 8.19 | | 10 |
| n-Hexane | 130 | 2.00 | 458 | 7.04 | | 10 |
| Propylene | 85.0 | 2.00 | 146 | 3.44 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-01 D
Client ID: RETAIL A SOUTH-A1
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 17:05
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 2.00 | ND | 8.51 | | 10 |
| Tetrachloroethene | ND | 2.00 | ND | 13.6 | | 10 |
| Tetrahydrofuran | 11.3 | 2.00 | 33.4 | 5.89 | | 10 |
| Toluene | 13.1 | 2.00 | 49.3 | 7.53 | | 10 |
| trans-1,2-Dichloroethene | ND | 2.00 | ND | 7.92 | | 10 |
| trans-1,3-Dichloropropene | ND | 2.00 | ND | 9.07 | | 10 |
| Trichloroethene | 2.78 | 2.00 | 14.9 | 10.7 | | 10 |
| Trichlorofluoromethane | ND | 2.00 | ND | 11.2 | | 10 |
| Vinyl acetate | ND | 2.00 | ND | 7.04 | | 10 |
| Vinyl bromide | ND | 2.00 | ND | 8.74 | | 10 |
| Vinyl chloride | 9.80 | 2.00 | 25.0 | 5.11 | | 10 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-02 D
Client ID: RETAIL A SOUTH-B2
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/08/09 20:44
Analyst: RY

Date Collected: 07/01/09 17:05
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.500 | ND | 2.72 | | 2.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.500 | ND | 3.43 | | 2.5 |
| 1,1,2-Trichloroethane | ND | 0.500 | ND | 2.72 | | 2.5 |
| 1,1-Dichloroethane | ND | 0.500 | ND | 2.02 | | 2.5 |
| 1,1-Dichloroethene | ND | 0.500 | ND | 1.98 | | 2.5 |
| 1,2,4-Trichlorobenzene | ND | 0.500 | ND | 3.71 | | 2.5 |
| 1,2,4-Trimethylbenzene | ND | 0.500 | ND | 2.46 | | 2.5 |
| 1,2-Dibromoethane | ND | 0.500 | ND | 3.84 | | 2.5 |
| 1,2-Dichlorobenzene | ND | 0.500 | ND | 3.00 | | 2.5 |
| 1,2-Dichloroethane | ND | 0.500 | ND | 2.02 | | 2.5 |
| 1,2-Dichloropropane | ND | 0.500 | ND | 2.31 | | 2.5 |
| 1,3,5-Trimethybenzene | ND | 0.500 | ND | 2.46 | | 2.5 |
| 1,3-Butadiene | ND | 0.500 | ND | 1.10 | | 2.5 |
| 1,3-Dichlorobenzene | ND | 0.500 | ND | 3.00 | | 2.5 |
| 1,4-Dichlorobenzene | ND | 0.500 | ND | 3.00 | | 2.5 |
| 1,4-Dioxane | ND | 0.500 | ND | 1.80 | | 2.5 |
| 2,2,4-Trimethylpentane | ND | 0.500 | ND | 2.33 | | 2.5 |
| 2-Butanone | 11.9 | 0.500 | 35.0 | 1.47 | | 2.5 |
| 2-Hexanone | 0.913 | 0.500 | 3.74 | 2.05 | | 2.5 |
| 3-Chloropropene | ND | 0.500 | ND | 1.56 | | 2.5 |
| 4-Ethyltoluene | ND | 0.500 | ND | 2.46 | | 2.5 |
| Acetone | 42.9 | 1.25 | 102 | 2.97 | | 2.5 |
| Benzene | ND | 0.500 | ND | 1.60 | | 2.5 |
| Benzyl chloride | ND | 0.500 | ND | 2.59 | | 2.5 |
| Bromodichloromethane | ND | 0.500 | ND | 3.35 | | 2.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-02 D
Client ID: RETAIL A SOUTH-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 17:05
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 0.500 | ND | 5.16 | | 2.5 |
| Bromomethane | ND | 0.500 | ND | 1.94 | | 2.5 |
| Carbon disulfide | 0.846 | 0.500 | 2.63 | 1.56 | | 2.5 |
| Carbon tetrachloride | ND | 0.500 | ND | 3.14 | | 2.5 |
| Chlorobenzene | ND | 0.500 | ND | 2.30 | | 2.5 |
| Chloroethane | ND | 0.500 | ND | 1.32 | | 2.5 |
| Chloroform | ND | 0.500 | ND | 2.44 | | 2.5 |
| Chloromethane | ND | 0.500 | ND | 1.03 | | 2.5 |
| cis-1,2-Dichloroethene | ND | 0.500 | ND | 1.98 | | 2.5 |
| cis-1,3-Dichloropropene | ND | 0.500 | ND | 2.27 | | 2.5 |
| Cyclohexane | ND | 0.500 | ND | 1.72 | | 2.5 |
| Dibromochloromethane | ND | 0.500 | ND | 4.26 | | 2.5 |
| Dichlorodifluoromethane | ND | 0.500 | ND | 2.47 | | 2.5 |
| Ethanol | 7.77 | 6.25 | 14.6 | 11.8 | | 2.5 |
| Ethyl Acetate | ND | 1.25 | ND | 4.50 | | 2.5 |
| Ethylbenzene | ND | 0.500 | ND | 2.17 | | 2.5 |
| Freon-113 | ND | 0.500 | ND | 3.83 | | 2.5 |
| Freon-114 | ND | 0.500 | ND | 3.49 | | 2.5 |
| Hexachlorobutadiene | ND | 0.500 | ND | 5.33 | | 2.5 |
| Isopropanol | 1.98 | 1.25 | 4.86 | 3.07 | | 2.5 |
| Methylene chloride | ND | 1.25 | ND | 4.34 | | 2.5 |
| 4-Methyl-2-pentanone | ND | 0.500 | ND | 2.05 | | 2.5 |
| Methyl tert butyl ether | ND | 0.500 | ND | 1.80 | | 2.5 |
| p/m-Xylene | 1.27 | 1.00 | 5.52 | 4.34 | | 2.5 |
| o-Xylene | ND | 0.500 | ND | 2.17 | | 2.5 |
| Heptane | ND | 0.500 | ND | 2.05 | | 2.5 |
| n-Hexane | ND | 0.500 | ND | 1.76 | | 2.5 |
| Propylene | 2.11 | 0.500 | 3.63 | 0.860 | | 2.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-02 D
Client ID: RETAIL A SOUTH-B2
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 17:05
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 0.500 | ND | 2.13 | | 2.5 |
| Tetrachloroethene | ND | 0.500 | ND | 3.39 | | 2.5 |
| Tetrahydrofuran | 5.68 | 0.500 | 16.7 | 1.47 | | 2.5 |
| Toluene | 1.19 | 0.500 | 4.50 | 1.88 | | 2.5 |
| trans-1,2-Dichloroethene | ND | 0.500 | ND | 1.98 | | 2.5 |
| trans-1,3-Dichloropropene | ND | 0.500 | ND | 2.27 | | 2.5 |
| Trichloroethene | 1.65 | 0.500 | 8.88 | 2.68 | | 2.5 |
| Trichlorofluoromethane | 0.772 | 0.500 | 4.34 | 2.81 | | 2.5 |
| Vinyl acetate | ND | 0.500 | ND | 1.76 | | 2.5 |
| Vinyl bromide | ND | 0.500 | ND | 2.18 | | 2.5 |
| Vinyl chloride | ND | 0.500 | ND | 1.28 | | 2.5 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-03
Client ID: AMBIENT
Sample Location: NORWOOD, MA
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 07/08/09 21:22
Analyst: RY

Date Collected: 07/01/09 16:47
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.200 | ND | 1.09 | | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 0.200 | ND | 1.37 | | 1 |
| 1,1,2-Trichloroethane | ND | 0.200 | ND | 1.09 | | 1 |
| 1,1-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,1-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| 1,2,4-Trichlorobenzene | ND | 0.200 | ND | 1.48 | | 1 |
| 1,2,4-Trimethylbenzene | 0.274 | 0.200 | 1.34 | 0.982 | | 1 |
| 1,2-Dibromoethane | ND | 0.200 | ND | 1.54 | | 1 |
| 1,2-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,2-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,2-Dichloropropane | ND | 0.200 | ND | 0.924 | | 1 |
| 1,3,5-Trimethybenzene | ND | 0.200 | ND | 0.982 | | 1 |
| 1,3-Butadiene | ND | 0.200 | ND | 0.442 | | 1 |
| 1,3-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dioxane | ND | 0.200 | ND | 0.720 | | 1 |
| 2,2,4-Trimethylpentane | ND | 0.200 | ND | 0.934 | | 1 |
| 2-Butanone | 1.04 | 0.200 | 3.06 | 0.589 | | 1 |
| 2-Hexanone | ND | 0.200 | ND | 0.819 | | 1 |
| 3-Chloropropene | ND | 0.200 | ND | 0.626 | | 1 |
| 4-Ethyltoluene | ND | 0.200 | ND | 0.982 | | 1 |
| Acetone | 11.5 | 0.500 | 27.3 | 1.19 | | 1 |
| Benzene | 0.205 | 0.200 | 0.655 | 0.638 | | 1 |
| Benzyl chloride | ND | 0.200 | ND | 1.03 | | 1 |
| Bromodichloromethane | ND | 0.200 | ND | 1.34 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-03
Client ID: AMBIENT
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:47
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 0.200 | ND | 2.06 | | 1 |
| Bromomethane | ND | 0.200 | ND | 0.776 | | 1 |
| Carbon disulfide | ND | 0.200 | ND | 0.622 | | 1 |
| Carbon tetrachloride | ND | 0.200 | ND | 1.26 | | 1 |
| Chlorobenzene | ND | 0.200 | ND | 0.920 | | 1 |
| Chloroethane | ND | 0.200 | ND | 0.527 | | 1 |
| Chloroform | ND | 0.200 | ND | 0.976 | | 1 |
| Chloromethane | 0.522 | 0.200 | 1.08 | 0.413 | | 1 |
| cis-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| cis-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Cyclohexane | ND | 0.200 | ND | 0.688 | | 1 |
| Dibromochloromethane | ND | 0.200 | ND | 1.70 | | 1 |
| Dichlorodifluoromethane | 0.528 | 0.200 | 2.61 | 0.988 | | 1 |
| Ethanol | 2.58 | 2.50 | 4.86 | 4.71 | | 1 |
| Ethyl Acetate | ND | 0.500 | ND | 1.80 | | 1 |
| Ethylbenzene | 0.232 | 0.200 | 1.00 | 0.868 | | 1 |
| Freon-113 | ND | 0.200 | ND | 1.53 | | 1 |
| Freon-114 | ND | 0.200 | ND | 1.40 | | 1 |
| Hexachlorobutadiene | ND | 0.200 | ND | 2.13 | | 1 |
| Isopropanol | 0.852 | 0.500 | 2.09 | 1.23 | | 1 |
| Methylene chloride | ND | 0.500 | ND | 1.74 | | 1 |
| 4-Methyl-2-pentanone | ND | 0.200 | ND | 0.819 | | 1 |
| Methyl tert butyl ether | ND | 0.200 | ND | 0.720 | | 1 |
| p/m-Xylene | 0.762 | 0.400 | 3.30 | 1.74 | | 1 |
| o-Xylene | 0.253 | 0.200 | 1.10 | 0.868 | | 1 |
| Heptane | ND | 0.200 | ND | 0.819 | | 1 |
| n-Hexane | ND | 0.200 | ND | 0.704 | | 1 |
| Propylene | ND | 0.200 | ND | 0.344 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-03
Client ID: AMBIENT
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 16:47
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 0.200 | ND | 0.851 | | 1 |
| Tetrachloroethene | 0.227 | 0.200 | 1.54 | 1.36 | | 1 |
| Tetrahydrofuran | ND | 0.200 | ND | 0.589 | | 1 |
| Toluene | 0.558 | 0.200 | 2.10 | 0.753 | | 1 |
| trans-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| trans-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Trichloroethene | 0.334 | 0.200 | 1.80 | 1.07 | | 1 |
| Trichlorofluoromethane | 0.288 | 0.200 | 1.62 | 1.12 | | 1 |
| Vinyl acetate | ND | 0.200 | ND | 0.704 | | 1 |
| Vinyl bromide | ND | 0.200 | ND | 0.874 | | 1 |
| Vinyl chloride | ND | 0.200 | ND | 0.511 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-04
Client ID: EPA SAMPLE
Sample Location: NORWOOD, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/08/09 22:00
Analyst: RY

Date Collected: 07/01/09 00:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| 1,1,1-Trichloroethane | 4.66 | 0.200 | 25.4 | 1.09 | | 1 |
| 1,1,2,2-Tetrachloroethane | 4.84 | 0.200 | 33.2 | 1.37 | | 1 |
| 1,1,2-Trichloroethane | 4.70 | 0.200 | 25.6 | 1.09 | | 1 |
| 1,1-Dichloroethane | 4.77 | 0.200 | 19.3 | 0.809 | | 1 |
| 1,1-Dichloroethene | 4.41 | 0.200 | 17.5 | 0.792 | | 1 |
| 1,2,4-Trichlorobenzene | 2.18 | 0.200 | 16.2 | 1.48 | | 1 |
| 1,2,4-Trimethylbenzene | 4.79 | 0.200 | 23.5 | 0.982 | | 1 |
| 1,2-Dibromoethane | ND | 0.200 | ND | 1.54 | | 1 |
| 1,2-Dichlorobenzene | 4.41 | 0.200 | 26.5 | 1.20 | | 1 |
| 1,2-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,2-Dichloropropane | 4.99 | 0.200 | 23.0 | 0.924 | | 1 |
| 1,3,5-Trimethybenzene | 5.02 | 0.200 | 24.6 | 0.982 | | 1 |
| 1,3-Butadiene | ND | 0.200 | ND | 0.442 | | 1 |
| 1,3-Dichlorobenzene | 4.44 | 0.200 | 26.6 | 1.20 | | 1 |
| 1,4-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dioxane | ND | 0.200 | ND | 0.720 | | 1 |
| 2,2,4-Trimethylpentane | ND | 0.200 | ND | 0.934 | | 1 |
| 2-Butanone | ND | 0.200 | ND | 0.589 | | 1 |
| 2-Hexanone | ND | 0.200 | ND | 0.819 | | 1 |
| 3-Chloropropene | ND | 0.200 | ND | 0.626 | | 1 |
| 4-Ethyltoluene | ND | 0.200 | ND | 0.982 | | 1 |
| Acetone | 0.733 | 0.500 | 1.74 | 1.19 | | 1 |
| Benzene | 4.53 | 0.200 | 14.5 | 0.638 | | 1 |
| Benzyl chloride | ND | 0.200 | ND | 1.03 | | 1 |
| Bromodichloromethane | ND | 0.200 | ND | 1.34 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-04
Client ID: EPA SAMPLE
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 00:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Bromoform | ND | 0.200 | ND | 2.06 | | 1 |
| Bromomethane | ND | 0.200 | ND | 0.776 | | 1 |
| Carbon disulfide | ND | 0.200 | ND | 0.622 | | 1 |
| Carbon tetrachloride | 4.25 | 0.200 | 26.7 | 1.26 | | 1 |
| Chlorobenzene | 5.06 | 0.200 | 23.3 | 0.920 | | 1 |
| Chloroethane | 3.56 | 0.200 | 9.40 | 0.527 | | 1 |
| Chloroform | 5.33 | 0.200 | 26.0 | 0.976 | | 1 |
| Chloromethane | 3.47 | 0.200 | 7.15 | 0.413 | | 1 |
| cis-1,2-Dichloroethene | 4.71 | 0.200 | 18.6 | 0.792 | | 1 |
| cis-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Cyclohexane | ND | 0.200 | ND | 0.688 | | 1 |
| Dibromochloromethane | ND | 0.200 | ND | 1.70 | | 1 |
| Dichlorodifluoromethane | 3.88 | 0.200 | 19.2 | 0.988 | | 1 |
| Ethanol | ND | 2.50 | ND | 4.71 | | 1 |
| Ethyl Acetate | ND | 0.500 | ND | 1.80 | | 1 |
| Ethylbenzene | 5.30 | 0.200 | 23.0 | 0.868 | | 1 |
| Freon-113 | ND | 0.200 | ND | 1.53 | | 1 |
| Freon-114 | 3.62 | 0.200 | 25.3 | 1.40 | | 1 |
| Hexachlorobutadiene | 3.88 | 0.200 | 41.4 | 2.13 | | 1 |
| Isopropanol | ND | 0.500 | ND | 1.23 | | 1 |
| Methylene chloride | 4.18 | 0.500 | 14.5 | 1.74 | | 1 |
| 4-Methyl-2-pentanone | ND | 0.200 | ND | 0.819 | | 1 |
| Methyl tert butyl ether | ND | 0.200 | ND | 0.720 | | 1 |
| p/m-Xylene | 5.37 | 0.400 | 23.3 | 1.74 | | 1 |
| o-Xylene | 4.82 | 0.200 | 20.9 | 0.868 | | 1 |
| Heptane | ND | 0.200 | ND | 0.819 | | 1 |
| n-Hexane | ND | 0.200 | ND | 0.704 | | 1 |
| Propylene | ND | 0.200 | ND | 0.344 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

## SAMPLE RESULTS

Lab ID: L0908989-04
Client ID: EPA SAMPLE
Sample Location: NORWOOD, MA
Date Collected: 07/01/09 00:00
Date Received: 07/06/09
Field Prep: Not Specified

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics in Air (Low Level) - Mansfield Lab** | | | | | | |
| Styrene | ND | 0.200 | ND | 0.851 | | 1 |
| Tetrachloroethene | 4.75 | 0.200 | 32.2 | 1.36 | | 1 |
| Tetrahydrofuran | ND | 0.200 | ND | 0.589 | | 1 |
| Toluene | 4.94 | 0.200 | 18.6 | 0.753 | | 1 |
| trans-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| trans-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Trichloroethene | 4.34 | 0.200 | 23.3 | 1.07 | | 1 |
| Trichlorofluoromethane | 4.73 | 0.200 | 26.6 | 1.12 | | 1 |
| Vinyl acetate | ND | 0.200 | ND | 0.704 | | 1 |
| Vinyl bromide | ND | 0.200 | ND | 0.874 | | 1 |
| Vinyl chloride | 2.52 | 0.200 | 6.43 | 0.511 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/08/09 17:29

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab for sample(s): 01-04 Batch: WG370013-4 | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.200 | ND | 1.09 | | 1 |
| 1,1,2,2-Tetrachloroethane | ND | 0.200 | ND | 1.37 | | 1 |
| 1,1,2-Trichloroethane | ND | 0.200 | ND | 1.09 | | 1 |
| 1,1-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,1-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| 1,2,4-Trichlorobenzene | ND | 0.200 | ND | 1.48 | | 1 |
| 1,2,4-Trimethylbenzene | ND | 0.200 | ND | 0.982 | | 1 |
| 1,2-Dibromoethane | ND | 0.200 | ND | 1.54 | | 1 |
| 1,2-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,2-Dichloroethane | ND | 0.200 | ND | 0.809 | | 1 |
| 1,2-Dichloropropane | ND | 0.200 | ND | 0.924 | | 1 |
| 1,3,5-Trimethybenzene | ND | 0.200 | ND | 0.982 | | 1 |
| 1,3-Butadiene | ND | 0.200 | ND | 0.442 | | 1 |
| 1,3-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dichlorobenzene | ND | 0.200 | ND | 1.20 | | 1 |
| 1,4-Dioxane | ND | 0.200 | ND | 0.720 | | 1 |
| 2,2,4-Trimethylpentane | ND | 0.200 | ND | 0.934 | | 1 |
| 2-Butanone | ND | 0.200 | ND | 0.589 | | 1 |
| 2-Hexanone | ND | 0.200 | ND | 0.819 | | 1 |
| 3-Chloropropene | ND | 0.200 | ND | 0.626 | | 1 |
| 4-Ethyltoluene | ND | 0.200 | ND | 0.982 | | 1 |
| Acetone | ND | 0.500 | ND | 1.19 | | 1 |
| Benzene | ND | 0.200 | ND | 0.638 | | 1 |
| Benzyl chloride | ND | 0.200 | ND | 1.03 | | 1 |
| Bromodichloromethane | ND | 0.200 | ND | 1.34 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/08/09 17:29

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab for sample(s): 01-04 Batch: WG370013-4 | | | | | | |
| Bromoform | ND | 0.200 | ND | 2.06 | | 1 |
| Bromomethane | ND | 0.200 | ND | 0.776 | | 1 |
| Carbon disulfide | ND | 0.200 | ND | 0.622 | | 1 |
| Carbon tetrachloride | ND | 0.200 | ND | 1.26 | | 1 |
| Chlorobenzene | ND | 0.200 | ND | 0.920 | | 1 |
| Chloroethane | ND | 0.200 | ND | 0.527 | | 1 |
| Chloroform | ND | 0.200 | ND | 0.976 | | 1 |
| Chloromethane | ND | 0.200 | ND | 0.413 | | 1 |
| cis-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| cis-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Cyclohexane | ND | 0.200 | ND | 0.688 | | 1 |
| Dibromochloromethane | ND | 0.200 | ND | 1.70 | | 1 |
| Dichlorodifluoromethane | ND | 0.200 | ND | 0.988 | | 1 |
| Ethanol | ND | 2.50 | ND | 4.71 | | 1 |
| Ethyl Acetate | ND | 0.500 | ND | 1.80 | | 1 |
| Ethylbenzene | ND | 0.200 | ND | 0.868 | | 1 |
| Freon-113 | ND | 0.200 | ND | 1.53 | | 1 |
| Freon-114 | ND | 0.200 | ND | 1.40 | | 1 |
| Hexachlorobutadiene | ND | 0.200 | ND | 2.13 | | 1 |
| Isopropanol | ND | 0.500 | ND | 1.23 | | 1 |
| Methylene chloride | ND | 0.500 | ND | 1.74 | | 1 |
| 4-Methyl-2-pentanone | ND | 0.200 | ND | 0.819 | | 1 |
| Methyl tert butyl ether | ND | 0.200 | ND | 0.720 | | 1 |
| p/m-Xylene | ND | 0.400 | ND | 1.74 | | 1 |
| o-Xylene | ND | 0.200 | ND | 0.868 | | 1 |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85
**Lab Number:** L0908989
**Report Date:** 07/13/09

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/08/09 17:29

| Parameter | ppbV Results | ppbV RDL | ug/m3 Results | ug/m3 RDL | Qualifier | Dilution Factor |
|---|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab for sample(s): 01-04 Batch: WG370013-4 | | | | | | |
| Heptane | ND | 0.200 | ND | 0.819 | | 1 |
| n-Hexane | ND | 0.200 | ND | 0.704 | | 1 |
| Propylene | ND | 0.200 | ND | 0.344 | | 1 |
| Styrene | ND | 0.200 | ND | 0.851 | | 1 |
| Tetrachloroethene | ND | 0.200 | ND | 1.36 | | 1 |
| Tetrahydrofuran | ND | 0.200 | ND | 0.589 | | 1 |
| Toluene | ND | 0.200 | ND | 0.753 | | 1 |
| trans-1,2-Dichloroethene | ND | 0.200 | ND | 0.792 | | 1 |
| trans-1,3-Dichloropropene | ND | 0.200 | ND | 0.907 | | 1 |
| Trichloroethene | ND | 0.200 | ND | 1.07 | | 1 |
| Trichlorofluoromethane | ND | 0.200 | ND | 1.12 | | 1 |
| Vinyl acetate | ND | 0.200 | ND | 0.704 | | 1 |
| Vinyl bromide | ND | 0.200 | ND | 0.874 | | 1 |
| Vinyl chloride | ND | 0.200 | ND | 0.511 | | 1 |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** ELMWAY FARMS

**Project Number:** 16356.85

**Lab Number:** L0908989

**Report Date:** 07/13/09

| Parameter | LCS %Recovery | LCSD %Recovery | %Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-04 Batch: WG370013-3 | | | | | |
| 1,1,1-Trichloroethane | 109 | - | 70-130 | - | |
| 1,1,2,2-Tetrachloroethane | 115 | - | 70-130 | - | |
| 1,1,2-Trichloroethane | 103 | - | 70-130 | - | |
| 1,1-Dichloroethane | 116 | - | 70-130 | - | |
| 1,1-Dichloroethene | 108 | - | 70-130 | - | |
| 1,2,4-Trichlorobenzene | 118 | - | 70-130 | - | |
| 1,2,4-Trimethylbenzene | 119 | - | 70-130 | - | |
| 1,2-Dibromoethane | 108 | - | 70-130 | - | |
| 1,2-Dichlorobenzene | 118 | - | 70-130 | - | |
| 1,2-Dichloroethane | **134** | - | 70-130 | - | |
| 1,2-Dichloropropane | 106 | - | 70-130 | - | |
| 1,3,5-Trimethylbenzene | 118 | - | 70-130 | - | |
| 1,3-Butadiene | 98 | - | 70-130 | - | |
| 1,3-Dichlorobenzene | 118 | - | 70-130 | - | |
| 1,4-Dichlorobenzene | 116 | - | 70-130 | - | |
| 1,4-Dioxane | 110 | - | 70-130 | - | |
| 2,2,4-Trimethylpentane | 96 | - | 70-130 | - | |
| 2-Butanone | 108 | - | 70-130 | - | |
| 2-Hexanone | 102 | - | 70-130 | - | |
| 3-Chloropropene | 93 | - | 70-130 | - | |
| 4-Ethyltoluene | 116 | - | 70-130 | - | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** ELMWAY FARMS

**Project Number:** 16356.85

**Lab Number:** L0908989

**Report Date:** 07/13/09

| Parameter | LCS %Recovery | LCSD %Recovery | %Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-04 Batch: WG370013-3 | | | | | |
| Acetone | 108 | - | 70-130 | - | |
| Benzene | 102 | - | 70-130 | - | |
| Benzyl chloride | 113 | - | 70-130 | - | |
| Bromodichloromethane | 107 | - | 70-130 | - | |
| Bromoform | 105 | - | 70-130 | - | |
| Bromomethane | 85 | - | 70-130 | - | |
| Carbon disulfide | 90 | - | 70-130 | - | |
| Carbon tetrachloride | 106 | - | 70-130 | - | |
| Chlorobenzene | 118 | - | 70-130 | - | |
| Chloroethane | 91 | - | 70-130 | - | |
| Chloroform | 120 | - | 70-130 | - | |
| Chloromethane | 97 | - | 70-130 | - | |
| cis-1,2-Dichloroethene | 113 | - | 70-130 | - | |
| cis-1,3-Dichloropropene | 96 | - | 70-130 | - | |
| Cyclohexane | 88 | - | 70-130 | - | |
| Dibromochloromethane | 109 | - | 70-130 | - | |
| Dichlorodifluoromethane | 111 | - | 70-130 | - | |
| Ethyl Alcohol | 96 | - | 70-130 | - | |
| Ethyl Acetate | 126 | - | 70-130 | - | |
| Ethylbenzene | 120 | - | 70-130 | - | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 113 | - | 70-130 | - | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** ELMWAY FARMS

**Project Number:** 16356.85

**Lab Number:** L0908989

**Report Date:** 07/13/09

| Parameter | LCS %Recovery | LCSD %Recovery | %Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-04 Batch: WG370013-3 | | | | | |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | 109 | - | 70-130 | - | |
| Hexachlorobutadiene | 124 | - | 70-130 | - | |
| iso-Propyl Alcohol | 102 | - | 70-130 | - | |
| Methylene chloride | 97 | - | 70-130 | - | |
| 4-Methyl-2-pentanone | 98 | - | 70-130 | - | |
| Methyl tert butyl ether | 122 | - | 70-130 | - | |
| p/m-Xylene | 120 | - | 70-130 | - | |
| o-Xylene | 122 | - | 70-130 | - | |
| Heptane | 87 | - | 70-130 | - | |
| n-Hexane | 86 | - | 70-130 | - | |
| Propylene | 88 | - | 70-130 | - | |
| Styrene | 117 | - | 70-130 | - | |
| Tetrachloroethene | 114 | - | 70-130 | - | |
| Tetrahydrofuran | 111 | - | 70-130 | - | |
| Toluene | 114 | - | 70-130 | - | |
| trans-1,2-Dichloroethene | 104 | - | 70-130 | - | |
| trans-1,3-Dichloropropene | 82 | - | 70-130 | - | |
| Trichloroethene | 101 | - | 70-130 | - | |
| Trichlorofluoromethane | 116 | - | 70-130 | - | |
| Vinyl acetate | 123 | - | 70-130 | - | |
| Vinyl bromide | 105 | - | 70-130 | - | |

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** ELMWAY FARMS

**Project Number:** 16356.85

**Lab Number:** L0908989

**Report Date:** 07/13/09

| Parameter | LCS %Recovery | LCSD %Recovery | %Recovery Limits | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-04 Batch: WG370013-3 | | | | | |
| Vinyl chloride | 98 | - | 70-130 | - | |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908989
**Report Date:** 07/13/09

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG370013-5 QC Sample: L0908989-01 Client ID: RETAIL A SOUTH-A1 | | | | | |
| 1,1,1-Trichloroethane | ND | ND | ppbV | NC | 25 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ppbV | NC | 25 |
| 1,1,2-Trichloroethane | ND | ND | ppbV | NC | 25 |
| 1,1-Dichloroethane | ND | ND | ppbV | NC | 25 |
| 1,1-Dichloroethene | ND | ND | ppbV | NC | 25 |
| 1,2,4-Trichlorobenzene | ND | ND | ppbV | NC | 25 |
| 1,2,4-Trimethylbenzene | ND | ND | ppbV | NC | 25 |
| 1,2-Dibromoethane | ND | ND | ppbV | NC | 25 |
| 1,2-Dichlorobenzene | ND | ND | ppbV | NC | 25 |
| 1,2-Dichloroethane | ND | ND | ppbV | NC | 25 |
| 1,2-Dichloropropane | ND | ND | ppbV | NC | 25 |
| 1,3,5-Trimethybenzene | ND | ND | ppbV | NC | 25 |
| 1,3-Butadiene | ND | ND | ppbV | NC | 25 |
| 1,3-Dichlorobenzene | ND | ND | ppbV | NC | 25 |
| 1,4-Dichlorobenzene | ND | ND | ppbV | NC | 25 |
| 1,4-Dioxane | ND | ND | ppbV | NC | 25 |
| 2,2,4-Trimethylpentane | ND | ND | ppbV | NC | 25 |
| 2-Butanone | 12.2 | 12.4 | ppbV | 2 | 25 |
| 2-Hexanone | ND | ND | ppbV | NC | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908989
**Report Date:** 07/13/09

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG370013-5 QC Sample: L0908989-01 Client ID: RETAIL A SOUTH-A1 | | | | | |
| 3-Chloropropene | ND | ND | ppbV | NC | 25 |
| 4-Ethyltoluene | ND | ND | ppbV | NC | 25 |
| Acetone | ND | ND | ppbV | NC | 25 |
| Benzene | 4.88 | 4.69 | ppbV | 4 | 25 |
| Benzyl chloride | ND | ND | ppbV | NC | 25 |
| Bromodichloromethane | ND | ND | ppbV | NC | 25 |
| Bromoform | ND | ND | ppbV | NC | 25 |
| Bromomethane | ND | ND | ppbV | NC | 25 |
| Carbon disulfide | ND | ND | ppbV | NC | 25 |
| Carbon tetrachloride | ND | ND | ppbV | NC | 25 |
| Chlorobenzene | ND | ND | ppbV | NC | 25 |
| Chloroethane | ND | ND | ppbV | NC | 25 |
| Chloroform | ND | ND | ppbV | NC | 25 |
| Chloromethane | ND | ND | ppbV | NC | 25 |
| cis-1,2-Dichloroethene | ND | ND | ppbV | NC | 25 |
| cis-1,3-Dichloropropene | ND | ND | ppbV | NC | 25 |
| Cyclohexane | 45.1 | 44.5 | ppbV | 1 | 25 |
| Dibromochloromethane | ND | ND | ppbV | NC | 25 |
| Dichlorodifluoromethane | ND | ND | ppbV | NC | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908989
**Report Date:** 07/13/09

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG370013-5 QC Sample: L0908989-01 Client ID: RETAIL A SOUTH-A1 | | | | | |
| Ethanol | ND | ND | ppbV | NC | 25 |
| Ethyl Acetate | ND | ND | ppbV | NC | 25 |
| Ethylbenzene | ND | ND | ppbV | NC | 25 |
| Freon-113 | ND | ND | ppbV | NC | 25 |
| Freon-114 | ND | ND | ppbV | NC | 25 |
| Hexachlorobutadiene | ND | ND | ppbV | NC | 25 |
| Isopropanol | 12.0 | 11.6 | ppbV | 3 | 25 |
| Methylene chloride | ND | ND | ppbV | NC | 25 |
| 4-Methyl-2-pentanone | ND | ND | ppbV | NC | 25 |
| Methyl tert butyl ether | ND | ND | ppbV | NC | 25 |
| p/m-Xylene | ND | ND | ppbV | NC | 25 |
| o-Xylene | ND | ND | ppbV | NC | 25 |
| Heptane | 56.5 | 56.7 | ppbV | 0 | 25 |
| n-Hexane | 130 | 132 | ppbV | 2 | 25 |
| Propylene | 85.0 | 87.6 | ppbV | 3 | 25 |
| Styrene | ND | ND | ppbV | NC | 25 |
| Tetrachloroethene | ND | ND | ppbV | NC | 25 |
| Tetrahydrofuran | 11.3 | 12.2 | ppbV | 8 | 25 |
| Toluene | 13.1 | 13.6 | ppbV | 4 | 25 |

# Lab Duplicate Analysis
## Batch Quality Control

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908989
**Report Date:** 07/13/09

| Parameter | Native Sample | Duplicate Sample | Units | RPD | RPD Limits |
|---|---|---|---|---|---|
| Volatile Organics in Air (Low Level) - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG370013-5 QC Sample: L0908989-01 Client ID: RETAIL A SOUTH-A1 | | | | | |
| trans-1,2-Dichloroethene | ND | ND | ppbV | NC | 25 |
| trans-1,3-Dichloropropene | ND | ND | ppbV | NC | 25 |
| Trichloroethene | 2.78 | 3.07 | ppbV | 10 | 25 |
| Trichlorofluoromethane | ND | ND | ppbV | NC | 25 |
| Vinyl acetate | ND | ND | ppbV | NC | 25 |
| Vinyl bromide | ND | ND | ppbV | NC | 25 |
| Vinyl chloride | 9.80 | 9.92 | ppbV | 1 | 25 |

**Project Name:** ELMWAY FARMS **Lab Number:** L0908989

**Project Number:** 16356.85 **Report Date:** 07/13/09

## Canister and Flow Controller Information

| Samplenum | Client ID | Media ID | Media Type | Cleaning Batch ID | Initial Pressure (in. Hg) | Pressure on Receipt (in. Hg) | Flow Out mL/min | Flow In mL/min | % RSD |
|---|---|---|---|---|---|---|---|---|---|
| L0908989-01 | RETAIL A SOUTH-A1 | 0147 | #16 SV | | - | - | 4.8 | 2.2 | 74 |
| L0908989-01 | RETAIL A SOUTH-A1 | 323 | 2.7L Can | I0907844 | -29.8 | -1.7 | - | - | - |
| L0908989-02 | RETAIL A SOUTH-B2 | 0139 | #16 AMB | | - | - | 4.9 | 5.0 | 2 |
| L0908989-02 | RETAIL A SOUTH-B2 | 148 | 2.7L Can | I0907556 | -29.8 | -0.7 | - | - | - |
| L0908989-03 | AMBIENT | 0309 | #20 SV | | - | - | 5.0 | 5.0 | 0 |
| L0908989-03 | AMBIENT | 529 | 2.7L Can | I0907844 | -29.3 | -1.1 | - | - | - |
| L0908989-04 | EPA SAMPLE | 0091 | #16 AMB | | - | - | 4.9 | 4.2 | 15 |
| L0908989-04 | EPA SAMPLE | 418 | 2.7L Can | I0907844 | -29.8 | 30.2 | - | - | - |

**Project Name:** ELMWAY FARMS
**Project Number:** 16356.85

**Lab Number:** L0908989
**Report Date:** 07/13/09

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

### Cooler Information

| Cooler | Custody Seal |
|---|---|
| N/A | Present/Intact |

### Container Information

| Container ID | Container Type | Cooler | pH | Temp deg C | Pres | Seal | Analysis |
|---|---|---|---|---|---|---|---|
| L0908989-01A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908989-02A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908989-03A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |
| L0908989-04A | Canister - 2.7 Liter | N/A | N/A | | NA | Present/Intact | TO15-LL(30) |

*Hold days indicated by values in parentheses

| | | | |
|---|---|---|---|
| **Project Name:** | ELMWAY FARMS | **Lab Number:** | L0908989 |
| **Project Number:** | 16356.85 | **Report Date:** | 07/13/09 |

## GLOSSARY

***Acronyms***

| | |
|---|---|
| EPA | · Environmental Protection Agency. |
| LCS | · Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. |
| LCSD | · Laboratory Control Sample Duplicate: Refer to LCS. |
| MS | · Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. |
| MSD | · Matrix Spike Sample Duplicate: Refer to MS. |
| NA | · Not Applicable. |
| NC | · Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit. |
| ND | · Not detected at the reported detection limit for the sample. |
| NI | · Not Ignitable. |
| RDL | · Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. |
| RPD | · Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report. |

***Terms***

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

***Data Qualifiers***

| | |
|---|---|
| ***** | - The batch duplicate RPD exceeds the acceptance criteria. This flag is not applicable when the sample concentrations are less than 5x the RDL. (Metals only.) |
| **A** | - Spectra identified as "Aldol Condensation Product". |
| **B** | - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte. |
| **D** | - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte. |
| **E** | - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument. |
| **H** | - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection. |
| **N** | - The matrix spike recovery exceeds the acceptance criteria. This flag is not applicable when the sample concentration is greater than 4x the spike added. (Metals only.) |
| **P** | - The RPD between the results for the two columns exceeds the method-specified criteria. |
| **R** | - Analytical results are from sample re-analysis. |
| **RE** | - Analytical results are from sample re-extraction. |
| **J** | - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs). |

*Report Format:* Data Usability Report

| | | | |
|---|---|---|---|
| **Project Name:** | ELMWAY FARMS | **Lab Number:** | L0908989 |
| **Project Number:** | 16356.85 | **Report Date:** | 07/13/09 |

## REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

# Certificate/Approval Program Summary

Last revised June 17, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

**Connecticut Department of Public Health** Certificate/Lab ID: PH-0141.

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

**Florida Department of Health** Certificate/Lab ID: E87814. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, 4500NH3-F, EPA 120.1, SM2510B, 2340B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, 420.1, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

**Louisiana Department of Environmental Quality** Certificate/Lab ID: 03090. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

**Maine Department of Human Services** Certificate/Lab ID: MA0030.

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

**Massachusetts Department of Environmental Protection** Certificate/Lab ID: M-MA030.

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

**New Hampshire Department of Environmental Services** Certificate/Lab ID: 2206. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection** Certificate/Lab ID: MA015. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. ***NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection** Certificate/Lab ID: 68-02089. ***NELAP Accredited.***

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. ***NELAP Accredited via LA-DEQ.***

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. ***NELAP Accredited.***

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7471. Organic Parameters: EPA 8015, 8270.)

**U.S. Army Corps of Engineers**

# AIR ANALYSIS

PAGE_____ OF _____

**CHAIN OF CUSTODY**

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

**ALPHA Job #:** L0908989

07130913:26

## Client Information

Client: JDN Realty
Address:
Phone:
Fax:
Email:
☐ These samples have been previously analyzed by Alpha

## Project Information

Project Name: Elmway Farms
Project Location: Norwood, MA
Project #: 16356.85
Project Manager: Matt Smith
ALPHA Quote #:

## Turn-Around Time

☑ Standard ☐ RUSH *(only confirmed if pre-approved!)*
Date Due: 7/8/09 Time: 1900hrs

## Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker: _____
*(Default based on Regulatory Criteria Indicated)*
Other Formats: _____
☑ EMAIL (standard pdf report)
☐ Additional Deliverables: _____
Report to: *(if different than Project Manager)*

## Billing Information

☐ Same as Client info PO #:
CBA

## Regulatory Requirements/Report Limits

| State/Fed | Program | Criteria |
|---|---|---|
| | | |
| | | |
| | | |

Other Project Specific Requirements/Comments:

**All Columns Below Must Be Filled Out**

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection Date | Start Time | End Time | Sample Matrix* | Sampler's Initials | Can Size | I D Can | I D - Flow Controller | TO-14A by TO-15 | TO-15 | TO-15 SIM | APH | FIXED GASES | TO-13A | TO-4 / TO-10 | Sample Comments (i.e. PID) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L0908989-1 | Retail A South - A1 | 7/1/09 | 0905 | 1705 | ~~AASV~~ | AKM | 2.7L | 373 | 0147 | | X | | | | | | |
| -2 | Retail A South - B2 | 7/1/09 | 0904 | 1705 | ~~AASV~~ | AKM | 2.7L | 148 | - | | X | | | | | | |
| -3 | Ambient | 7/1/09 | 0847 | 1647 | AA | AKM | 2.7L | 539 | 0309 | | X | | | | | | |
| ~~-4~~ | ~~Site Sample~~ | ~~7/1/09~~ | | | ~~AA~~ | | ~~2.7L~~ | ~~418~~ | ~~0091~~ | | ~~X~~ | | | | | | TWS |
| -4 | EPA SAMPLE | 7/1/09 | | | ~~AASV~~ | | 2.7L | 418 | 0091 | | X | | | | | | |

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

| Relinquished By: | Date/Time | Received By: | Date/Time: |
|---|---|---|---|
| | 7/2/2009/1300 | CONTAINER SEAL | 7/2/2009 1300 |
| | 7-6-09 | [illegible] | 7-6-09 13:00 |
| | | [illegible] | 7/6/09 1520 |

Form No: 101-02 (rev.14-OCT-07)

# APPENDIX B

# RISK CHARACTERIZATION

# APPENDIX B

## RISK CHARACTERIZATION

GZA GeoEnvironmental, Inc. (GZA) has completed a characterization of potential human health risks associated with exposures to indoor air contaminants at the Shoppes at the Elmway Farms Site (the "Site) located in Norwood, Massachusetts. This risk characterization supplements an indoor air risk characterization performed previously for the Site based on concentrations detected in groundwater. This risk characterization considers the analytical results of the soil gas samples collected by GZA in July 2009 from beneath the existing Site buildings.

GZA conducted the risk characterization in accordance with the requirements of the United States Environmental Protection Agency (USEPA) guidance document titled "Risk Assessment Guidance for Superfund" (RAGS), and the relevant documents in this series, including the supplemental RAGS. In addition, the Massachusetts Department of Environmental Protection (MassDEP) guidance (MassDEP, 2008) was consulted in completing the risk characterization. This risk characterization was conducted subject to the limitations included in Attachment I.

The cancer risks and non-cancer hazard indices based on the reasonable maximum exposure (RME) scenario for commercial/industrial workers and other Site users[1] with exposure to indoor air potentially impacted by vapor intrusion at the Site are within the USEPA non-cancer hazard target limit of 1 and the cancer target risk range of $10^{-6}$ ~ $10^{-4}$. Therefore, the residual concentrations of contaminants in Site groundwater pose no significant risks to potential human receptors due to vapor inhalation. The key components of any risk assessment are data, exposure, and toxicity. Components of each of these elements are summarized in this appendix.

### DATA USED IN RISK CHARACTERIZATION AND HAZARD IDENTIFICATION

GZA collected sub-slab soil gas samples in July 2009 from beneath the Retail A and Retail B buildings, utilizing sampling devices that were constructed at the Site in accordance with the Quality Assurance Project Plan (QAPP) that was prepared by GZA in May, 2009 and approved by the USEPA Region I. Six sub-slab soil gas samples were collected from beneath Retail Building B and four sub-slab soil gas samples were collected from beneath Retail Building A. In addition, an ambient air sample was collected during the sub-slab soil gas sampling event. The samples were analyzed for volatile organic compounds (VOCs) including seven constituents of potential concern (COPCs) identified in Site groundwater (i.e., vinyl chloride, cis-1,2-dichloroethene, trichloroethene, trans-1,2-dichloroethene, tetrachloroethene, 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene)[2]. The objective of the sub-slab soil gas sampling

[1] Other potential Site users under future hypothetical Site uses including Site visitors/customers, day care children and workers, fitness club members and workers, and other recreational users of the Site would be no more exposed than the evaluated receptor (commercial/ industrial worker), thus risks to these receptors would also be within the EPA's target risk range..

[2] 1,2,4-Trichlorobenzene, 1,4-dichlorobenzene, total 1,2-dichloroethenes, tetrachloroethene, trichloroethene, and vinyl chloride were identified as groundwater COPCs and risk-based action levels were developed and presented in the Final Technical Memorandum, Development of Risk-Based Action Levels for the Protection of Ecological

was to evaluate the potential vapor intrusion pathway and to characterize the VOC concentrations below the slab and the vapor barrier system installed during the construction of the buildings.

The sub-slab soil gas samples collected from the sealed cells that were installed beneath the buildings (sample point A) had VOC concentrations that were elevated compared to the concentrations detected in the samples collected from beneath the barrier (sample point B). GZA suspects that the sample point A samples have been impacted by off-gassing from the polyvinyl chloride (PVC) pipe that was used in constructing the sampling cells. These samples were thus not considered by GZA to be representative of the Site conditions. Nonetheless, as a conservative step, these samples were included in this risk characterization, along with the sample point B samples. The samples collected from location Retail B Northeast had elevated laboratory reporting limits as well as concentrations of tetrahyrofuran and 2-butanone (both common constituents of PVC glue). As described further in the main report, though PVC glue was not used during the initial installation of the sampling equipment, it appears that subsequent repairs were made at this location that utilized PVC glue. Given the confounding effect of the PVC glue constituents on the reporting limits for the Site COPCs, the samples were considered unrepresentative and were not considered in the risk characterization. The data used in this risk characterization are presented in Table B-1 and summarized in Table B-2.

Various VOCs were detected in the sub-slab soil gas samples. Among these detected VOCs, only trichloroethene (TCE) and vinyl chloride (VC) were identified as groundwater COPCs. All the other VOCs were not groundwater COPCs. Further, with the exception of acetone and tetrahydrofuran, these other VOCs have never been detected in Site groundwater[3]. Therefore, TCE and VC were identified as the soil gas and indoor air COPCs for this risk characterization (Table B-2). The other detected VOCs were not attributed to groundwater impacts and were thus not identified as COPCs for the potential vapor intrusion exposure pathway.

## EXPOSURE ASSESSMENT

This risk characterization was conducted for a reasonable maximum exposure scenario. The RME is defined as the highest exposure that could reasonably be expected to occur for a given exposure pathway at a site, and is intended to account for both uncertainty in the contaminant concentration and variability in the exposure parameters (such as exposure frequency or averaging time).

### Receptors

Commercial/industrial workers working inside the on-Site buildings were identified as the most sensitive populations that may be exposed to the potentially impacted indoor air at the Site based on the current and reasonably foreseeable activities and uses. There is no plan for the Site to be used

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Receptors for Contaminants of Potential Concern in Groundwater at the Norwood PCB Superfund Site, prepared by Foster Wheeler Environmental Corporation dated March 2003,

[3] Acetone was only detected during the April 2008 sampling event and tetrahydrofuran was only detected during the November 2008 sampling event. Neither analyte was detected during any other 12 rounds of groundwater sampling events.

for residential purposes (and, in fact, an existing Grant of Environmental Restriction precludes residential redevelopment of the property). Therefore, residents were not identified as a potential receptor group based on the current and reasonably foreseeable activities and uses of the Site.

Risk estimates were not calculated for other potential receptors that would be expected to have no more frequent exposure than the receptors evaluated, such as Site visitors,/customers,/recreational users, day care children and workers, and fitness club members and workers. If a condition of No Significant Risk is shown to exist for the selected receptor group, a condition of No Significant Risk would also exist for these other potential receptor groups.

**Exposure Point Concentration**

The maximum detected representative sub-slab soil gas concentrations for Retail Building A and Retail Building B were used as the soil gas EPCs for the two buildings, respectively. The maximum detected TCE and VC concentrations in the sub-slab soil gas samples collected from beneath Retail Building A were 24.8 parts per billion in volume (ppbv) and 9.8 ppbv, respectively, or 0.13 milligram per cubic meter ($mg/m^3$) and 0.025 $mg/m^3$, respectively. The maximum detected TCE and VC concentrations in the sub-slab soil gas samples collected from beneath Retail Building B were 13.8 ppbv and 8.32 ppbv, respectively, or 0.074 $mg/m^3$ and 0.021 $mg/m^3$, respectively.

Indoor air EPCs were calculated for Retail Building A and Retail Building B separately. The indoor air concentrations were estimated by multiplying the soil gas EPCs by a default USEPA (2002) soil gas to indoor air attenuation factor of 0.1. According to USEPA (2002), the attenuation factor of 0.1 was used to represent a generally reasonable upper-bound value for the case where the soil gas concentration immediately beneath a foundation is used (e.g., the indoor air concentration would not be expected to exceed 1/10 of the concentration immediately below the foundation). The 0.1 attenuation factor is an extremely conservative assumption for the Site considering that the buildings were newly built with a vapor barrier system.

The soil gas EPCs and indoor air EPCs for Retail Building A and Retail Building B are presented in Table B-3.

**Exposure Assumptions**

The exposure assumptions for the identified receptors were intended to approximate the frequency, duration, and manner in which receptors are exposed to environmental media. Exposure assumptions and parameters were identified for the RME scenario based on the most conservative assumptions provided in the USEPA guidance and MassDEP guidance. In summary, the following USEPA and MassDEP guidance documents were consulted for the exposure assumptions in this risk characterization.

- USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. December.
- USEPA, 2009. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment).

- MassDEP, 2008. Development of MCP Risk-Based Levels for Soil and Groundwater.

Details of the exposure assumptions and parameters for each exposure scenario are shown in Table B-4 for commercial/industrial workers. Commercial/industrial workers were assumed to work at the Site and inhale the indoor air eight hours a day and five days per week for 50 weeks per year (assuming two weeks vacation). Consistent with the MassDEP (2008) and USEPA guidance, the exposure period for commercial/industrial workers utilized in this analysis is 25 years.

## TOXICITY FACTORS

The toxicity values for this risk assessment were selected in accordance with the USEPA recommended human health toxicity value hierarchy. In a memorandum issued to Superfund Regions 1-10 National Policy Managers in December 2003, the USEPA Office of Solid Waste and Emergency Response (OSWER) provided a revised recommended human health toxicity value hierarchy as follows:

- Tier 1 – USEPA's Integrated Risk Information System (IRIS).
- Tier 2 – USEPA's Provisional Peer Reviewed Toxicity Values (PPRTVs) developed by the Office of Research and Development / National Center for Environmental Assessment (NCEA) / Superfund Health Risk Technical Support Center (STSC).
- Tier 3 – Other Toxicity Values from additional USEPA and non-EPA sources with priority given to those sources of information that are the most current, the basis for which is transparent and publicly available, and which have been peer reviewed.

On January 15, 2009, USEPA issued an interim memorandum titled "Interim Recommended Trichloroethylene (TCE) Toxicity Values to Assess Human Health Risk and Recommendations for the Vapor Intrusion Pathway Analysis". As recommended by USEPA Region I, GZA has used the toxicity factors recommended in this memorandum. In this memorandum, USEPA recommended a referenced concentration of 10 $\mu g/m^3$, or 0.01 milligram per cubic meter ($mg/ m^3$) for TCE, which was developed by the New York State Department of Health (NYSDOH). The inhalation unit risk value recommended in this memorandum for TCE [2.0E-6 $(\mu g/m^3)^{-1}$] is the California Environmental Protection Agency's (Cal EPA's) inhalation unit risk value[4]. These USEPA recommended toxicity values were more stringent than the MassDEP recommended values for TCE [i.e., reference concentration of 0.18 $mg/ m^3$ and inhalation unit risk of 1.7E-6 $(\mu g/m^3)^{-1}$] and were used in this risk characterization as a conservative step.

The toxicity values provided by the USEPA IRIS for VC were used in this characterization. The IRIS provides two sets of unit risk values for VC - the unit risk estimate of 4.4 E-6 $/(\mu g/m)^3$ to account for continuous, lifetime exposure during adulthood, and a twofold increase to 8.8 E-6 $/(\mu g/m)^3$ , to account for continuous lifetime exposure from birth. The unit risk value of 4.4 E-6 $/(\mu g/m)^3$ is appropriate for evaluating risks to commercial/industrial workers; nonetheless, as Site users may include child receptors, the unit risk value of 8.8 E-6 $/(\mu g/m)^3$ was used in this risk characterization as a conservative step.

[4] It should be noted that the January 15, 2009 guidance was withdrawn by USEPA on April 9, 2009.

Toxicity information is presented in Tables B-5 and B-6.

## RISK CHARACTERIZATION AND CONCLUSIONS

Potential exposures to indoor air impacted by vapor intrusion were evaluated in this risk characterization. The risk calculation is shown in Tables B-7 through Table B-10 and the risk results are summarized in Table B-11.

For the indoor air exposure pathway in Retail Building A, the non-cancer hazard index is 0.3 for commercial/industrial workers. The cancer risk based on the RME is $4x10^{-6}$ for commercial/industrial workers.

For the indoor air exposure pathway in Retail Building B, the non-cancer hazard index is 0.2 for commercial/industrial workers. The cancer risk based on the RME is $3x10^{-6}$ for commercial/industrial workers.

For both Retail Building A and Retail Building B, the non-cancer hazard indices for commercial/industrial workers are below the USEPA and MassDEP target limit of 1. The cancer risks are within the USEPA target risk range of $10^{-6}$ - $10^{-4}$ for Superfund sites (and are below the MassDEP target risk limit of $10^{-5}$). Therefore, it is concluded that the COPCs in Site soil gas are not expected to pose significant risks to potential human receptors by entering the building and impacting indoor air via vapor intrusion.

## REFERENCES

California Environmental Protection Agency (CalEPA). Air Toxics Hot Spot Program Risk Assessment Guidelines. On-line resources available at http://www.oehha.ca.gov/air/hot_spots/. As of September, 2009.

Foster Wheeler Environmental Corporation. 2003. Final Technical Memorandum, Development of Risk-Based Action Levels for the Protection of Ecological Receptors for Contaminants of Potential Concern in Groundwater at the Norwood PCB Superfund Site. March.

GZA GeoEnvironmental, Inc. (GZA). 2009. Quality Assurance Project Plan (QAPP) for Norwood PCB Superfund Site Redevelopment – Subslab Sampling. May.

Massachusetts Department of Environmental Protection (MassDEP), 2008. Development of MCP Risk-Based Levels for Soil and Groundwater.

New York State Department of Health (NYSDOH). 2006. Trichloroethene Air Criteria Document. On-line resources available at http://www.nyhealth.gov/environmental/chemicals/trichloroethene/docs/cd_tce.pdf.

United States Environmental Protection Agency (USEPA). 2010. Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS/, February.

United States Environmental Protection Agency (USEPA). 2009. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment). January.

United States Environmental Protection Agency (USEPA). 2009. Interim Recommended Trichloroethylene (TCE) Toxicity Values to Assess Human Health Risk and Recommendations for the Vapor Intrusion Pathway Analysis. January.

United States Environmental Protection Agency (USEPA). 2003. Human Health Toxicity Values in Superfund Risk Assessment, Memorandum to Superfund National Policy Managers, Region 1-10. Office of Solid Waste and Emergency Response. December.

United States Environmental Protection Agency (USEPA). 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. December.

**TABLE B-1**
SUB-SLAB SOIL GAS DATA
Shoppes At Elmway Farms
Norwood, MA

| Analytes | CAS | Retail B Northwest A1 L0908991-1 07/01/2009 Result | Retail B Northwest B2 L0908991-2 07/01/2009 Result | Retail B Northmid A1 L0908991-3 07/01/2009 Result | Retail B Northmid B2 L0908991-4 07/01/2009 Result | Retail A North A1 L0908991-7 07/01/2009 Result | Retail A North B2 L0908991-8 07/01/2009 Result | Retail A South A1 L0908989-1 07/01/2009 Result | Retail A South B2 L0908989-2 07/01/2009 Result |
|---|---|---|---|---|---|---|---|---|---|
| VOLATILE ORGANICS | | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | <2 | 0.534 | <2 | 0.568 | <1.0 | 0.575 | <2 | <0.5 |
| Chloromethane | 74-87-3 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Vinyl Chloride | 75-01-4 | 3.05 | <0.2 | 8.32 | <0.4 | 6.28 | <0.5 | 9.8 | <0.5 |
| Bromomethane | 74-83-9 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Chloroethane | 75-00-3 | 2.92 | 0.495 | 11 | 4.9 | 1.34 | <0.5 | <2 | <0.5 |
| Trichlorofluoromethane | 75-69-4 | <2 | 0.514 | <2 | <0.4 | <1.0 | <0.5 | <2 | 0.772 |
| Diethylether | 60-29-7 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,1-Dichloroethene | 75-35-4 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Cyclohexane | 76-13-1 | 20.3 | <0.2 | 86.6 | <0.4 | 81.7 | <0.5 | <2 | 45.1 |
| Carbon Disulfide | 75-15-0 | <2 | 0.458 | <2 | 0.4 | <1.0 | <0.5 | <2 | 0.846 |
| Dichloromethane | 75-09-2 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| tert-Butyl alcohol (TBA) | 75-65-0 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Methyl-Tert-Butyl-Ether | 1634-04-4 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| trans-1,2-Dichloroethene | 156-60-5 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,1-Dichloroethane | 75-34-3 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Di-isopropyl ether (DIPE) | 108-20-3 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Propylene | 637-92-3 | 42 | 4.26 | 163 | 8.35 | 115 | <0.5 | 85 | 2.11 |
| 2-Butanone | 78-93-3 | 353 | 15 | 100 | 43.5 | 31.7 | 16 | 12 | 11.9 |
| 2,2-Dichloropropane | 594-20-7 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| cis-1,2-Dichloroethene | 156-59-2 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Chloroform | 67-66-3 | <2 | <0.2 | 4.32 | <0.4 | 1.4 | <0.5 | <2 | <0.5 |
| Bromochloromethane | 74-97-5 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Tetrahydrofuran | 109-99-9 | 385 | 6.71 | 475 | 23.1 | 125 | 200 | 11.3 | 5.68 |
| 1,1,1-Trichloroethane | 71-55-6 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Acetone | | <5 | 71.8 | <5 | <1.0 | <2.5 | 32.4 | <5 | 42.9 |
| 1,1-Dichloropropene | 563-58-6 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Carbon Tetrachloride | 56-23-5 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,2-Dichloroethane | 107-06-2 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Benzene | 71-43-2 | <2 | 0.343 | 3.53 | 0.449 | 9.38 | <0.5 | 4.8 | <0.5 |
| tert-Amyl methyl ether TAME | 994-05-8 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Trichloroethene | 79-01-6 | 7.65 | 1.19 | 13.8 | 0.993 | 24.8 | 1 | 2.78 | 1.65 |
| 1,4-Dioxane | 123-91-1 | <2 | <0.2 | <2 | 1.07 | <1.0 | <0.5 | <2 | <0.5 |
| 1,2-Dichloropropane | 78-87-5 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Bromodichloromethane | 75-27-4 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Dibromomethane | 74-95-3 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 4-Methyl-2-Pentanone | 108-10-1 | <2 | <0.2 | <2 | 1.82 | <1.0 | <0.5 | <2 | <0.5 |
| cis-1,3-Dichloropropene | 10061-01- | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Toluene | 108-88-3 | 2.51 | 0.691 | 123 | 1.23 | 31.3 | 1.1 | 13.1 | 1.19 |
| trans-1,2-Dichloroethene | 10061-02- | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,1,2-Trichloroethane | 79-00-5 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 2-Hexanone | 591-78-6 | <2 | 0.868 | <2 | 1.2 | <1.0 | 0.754 | <2 | 0.913 |
| 1,3-Dichloropropane | 142-28-9 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Tetrachloroethene | 127-18-4 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Dibromochloromethane | 124-48-1 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,2-Dibromoethane (EDB) | 106-93-4 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Chlorobenzene | 108-90-7 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Ethylbenzene | 100-41-4 | <2 | <0.2 | 2.95 | <0.4 | 1.51 | <0.5 | <2 | <0.5 |
| Ethanol | | 49.3 | 12.9 | <25 | 16.8 | 17.1 | 7.35 | <25 | 7.77 |
| m&p-Xylene | 179601-23 | <4 | <0.4 | 5.94 | <0.8 | 3.68 | 1.18 | <4 | 1.27 |
| o-Xylene | 95-47-6 | <2 | <0.2 | <2 | <0.4 | 1.39 | <0.5 | <2 | <0.5 |
| 1,3-Butadiene | 100-42-5 | <2 | <0.2 | <2 | <0.4 | <1.0 | 0.51 | <2 | <0.5 |
| Bromoform | 75-25-2 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Isopropanol | | 7.25 | 3.1 | <5 | 4.73 | 6.65 | 1.88 | 12 | 1.98 |
| Isopropylbenzene | 98-82-8 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |

**TABLE B-1**
SUB-SLAB SOIL GAS DATA
Shoppes At Elmway Farms
Norwood, MA

| Analytes | CAS | Retail B Northwest A1 L0908991-1 07/01/2009 Result | Retail B Northwest B2 L0908991-2 07/01/2009 Result | Retail B Northmid A1 L0908991-3 07/01/2009 Result | Retail B Northmid B2 L0908991-4 07/01/2009 Result | Retail A North A1 L0908991-7 07/01/2009 Result | Retail A North B2 L0908991-8 07/01/2009 Result | Retail A South A1 L0908989-1 07/01/2009 Result | Retail A South B2 L0908989-2 07/01/2009 Result |
|---|---|---|---|---|---|---|---|---|---|
| 1,2,3-Trichloropropane | 96-18-4 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| n-Hexane | 108-86-1 | 11.5 | 0.204 | 203 | <0.4 | 248 | <0.5 | 130 | <0.5 |
| n-Propylbenzene | 103-65-1 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 2-Chlorotoluene | 95-49-8 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,3,5-Trimethylbenzene | 108-67-8 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 4-Chlorotoluene | 106-43-4 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| tert-Butylbenzene | 98-06-6 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,2,4-Trimethylbenzene | 95-63-6 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 2,2,4-Trimethylpentane | 135-98-8 | 19.9 | 0.225 | 114 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| p-Isopropyltoluene | 99-87-6 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,3-Dichlorobenzene | 541-73-1 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,4-Dichlorobenzene | 106-46-7 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| n-Butylbenzene | 104-51-8 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,2-Dichlorobenzene | 95-50-1 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,2-Dibromo-3-Chloropropane | 96-12-8 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| 1,2,4-Trichlorobenzene | 120-82-1 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Hexachlorobutadiene | 87-68-3 | <2 | <0.2 | <2 | <0.4 | <1.0 | <0.5 | <2 | <0.5 |
| Methylene Chloride | 75-09-2 | <5 | <0.5 | <5 | <1.0 | <2.5 | <0.5 | <5 | <1.3 |
| Heptane | 91-20-3 | 4.8 | <0.2 | 75 | <0.4 | 96 | <0.5 | 56.5 | <0.5 |

Unit: parts per billion in volume (ppbv).
Notes:
1. This table presents the results for the sub-slab soil gas samples collected within the ventilation layer between the vapor barrier (below the floor slab) and subgrade Site soils (sample point B).
The sample collected from location Retail B Northeast had elevated reporting limits likely due to the confounding effect of the PVC glue; this sample was considered unrepresentative and was not considered in the risk characterization.
2.Highlighted analytes are groundwater COPCs.

**TABLE B-2**
SUMMARY OF ANALYTICAL DATA FOR SOIL GAS
Shoppes At Elmway Farms
Norwood, Massachusetts

| Analytical Parameter [1] | Frequency Of Detection [2] | Range Detected[3] (ppbv) | Median Concentration[4] (ppbv) | Arithmetic Mean Concentration[4] (ppbv) | Retail A Maximum Concentration[4] (ppbv) | Retail A Maximum Detected Concentration Location | Retail B Maximum Concentration[4] (ppbv) | Retail B Maximum Detected Concentration Location |
|---|---|---|---|---|---|---|---|---|
| *VOLATILE ORGANICS* | | | | | | | | |
| Dichlorodifluoromethane | 3 / 8 | 0.53 - 0.58 | 0.57 | 0.68 | 0.58 | Retail A North B2 | 0.57 | Retail B Northmid B2 |
| Vinyl Chloride | 4 / 8 | 3.1 - 9.8 | 1.7 | 3.5 | 9.8 | Retail A South A1 | 8.3 | Retail B Northmid A1 |
| Chloroethane | 5 / 8 | 0.50 - 11 | 1.2 | 2.8 | 1.3 | Retail A North A1 | 11 | Retail B Northmid A1 |
| Trichlorofluoromethane | 2 / 8 | 0.51 - 0.77 | 0.64 | 0.65 | 0.77 | Retail A South B2 | 0.51 | Retail B Northwest B2 |
| Cyclohexane | 4 / 8 | 20 - 87 | 11 | 29 | 82 | Retail A North A1 | 87 | Retail B Northmid A1 |
| Carbon Disulfide | 3 / 8 | 0.40 - 0.85 | 0.67 | 0.68 | 0.85 | Retail A South B2 | 0.46 | Retail B Northwest B2 |
| Propylene | 7 / 8 | 2.1 - 163 | 25 | 52 | 115 | Retail A North A1 | 163 | Retail B Northmid A1 |
| 2-Butanone | 8 / 8 | 12 - 353 | 24 | 73 | 32 | Retail A North A1 | 353 | Retail B Northwest A1 |
| Chloroform | 2 / 8 | 1.4 - 4.3 | 0.63 | 1.1 | 1.4 | Retail A North A1 | 4.3 | Retail B Northmid A1 |
| Tetrahydrofuran | 8 / 8 | 6 - 475 | 74 | 154 | 200 | Retail A North B2 | 475 | Retail B Northmid A1 |
| Acetone | 3 / 8 | 32 - 72 | 2.5 | 20 | 43 | Retail A South B2 | 72 | Retail B Northwest B2 |
| Benzene | 5 / 8 | 0.34 - 9.4 | 0.72 | 2.5 | 9.4 | Retail A North A1 | 3.5 | Retail B Northmid A1 |
| Trichloroethene | 8 / 8 | 0.993 - 24.8 | 2.2 | 6.7 | 24.8 | Retail A North A1 | 13.8 | Retail B Northmid A1 |
| 1,4-Dioxane | 1 / 8 | 1.1 - 1.1 | 0.75 | 0.65 | ND | NA | 1.1 | Retail B Northmid B2 |
| 4-Methyl-2-Pentanone | 1 / 8 | 1.8 - 1.8 | 0.75 | 0.74 | ND | NA | 1.8 | Retail B Northmid B2 |
| Toluene | 8 / 8 | 0.7 - 123 | 1.9 | 22 | 31 | Retail A North A1 | 123 | Retail B Northmid A1 |
| 2-Hexanone | 4 / 8 | 0.8 - 1.2 | 1.0 | 0.90 | 0.91 | Retail A South B2 | 1.2 | Retail B Northmid B2 |
| Ethylbenzene | 2 / 8 | 1.5 - 3.0 | 0.63 | 0.91 | 1.5 | Retail A North A1 | 3.0 | Retail B Northmid A1 |
| Ethanol | 6 / 8 | 7.4 - 49 | 13 | 17 | 17 | Retail A North A1 | 49 | Retail B Northwest A1 |
| m&p-Xylene | 4 / 8 | 1.2 - 5.9 | 1.6 | 2.1 | 3.7 | Retail A North A1 | 5.9 | Retail B Northmid A1 |
| o-Xylene | 1 / 8 | 1.4 - 1.4 | 0.63 | 0.65 | 1.4 | Retail A North A1 | ND | NA |
| 1,3-Butadiene | 1 / 8 | 0.5 - 0.51 | 0.51 | 0.57 | 0.51 | Retail A North B2 | ND | NA |
| Isopropanol | 7 / 8 | 1.9 - 12 | 3.9 | 5.0 | 12 | Retail A South A1 | 7.3 | Retail B Northwest A1 |
| n-Hexane | 5 / 8 | 0.20 - 248 | 5.9 | 74 | 248 | Retail A North A1 | 203 | Retail B Northmid A1 |
| 2,2,4-Trimethylpentane | 3 / 8 | 0.23 - 114 | 0.38 | 17 | ND | NA | 114 | Retail B Northmid A1 |
| Heptane | 4 / 8 | 4.8 - 96 | 2.5 | 29 | 96 | Retail A North A1 | 75 | Retail B Northmid A1 |

Notes:
1. Only detected analytes are listed.
2. All samples presented in Table B-1 are included in the statistics.
3. These statistics only include analytical results for constituents detected above the sample reporting limit (RL).
4. These statistics include all detected constituent concentrations and one-half the RL for constituents not detected above the RL.
5. Highlighted analytes are groundwater COPCs.

ND = Not Detected NA = Not Applicable

**TABLE B-3**
SUMMARY OF EXPOSURE POINT CONCENTRATIONS
Shoppes At Elmway Farms
Norwood, MA

| | EPC1 | EPC2 | EPC3 | EPC4 |
|---|---|---|---|---|
| COC | Retail A Maximum Concentration in Soil Gas[a] (mg/m3) | Retail A Estimated Concentration in Indoor Air[b] (mg/m³) | Retail B Maximum Concentration in Soil Gas[a] (mg/m3) | Retail B Estimated Concentration in Indoor Air[b] (mg/m³) |
| Trichloroethene | 1.3E-01 | 1.3E-02 | 7.4E-02 | 7.4E-03 |
| Vinyl Chloride | 2.5E-02 | 2.5E-03 | 2.1E-02 | 2.1E-03 |

Notes:

a. The soil gas exposure point concentration is based on the average detected concentration from the sub-slab soil gas samples collected for Retail A and Retail B buildings, respectively.

b. The indoor air exposure point concentration was modeled from the soil gas exposure point concentration based on a conservative default attenuation factor of 0.1.

Abbreviations:

COC = constituent of concern.

**TABLE B-4**
COMMERCIAL/INDUSTRIAL WORKER EXPOSURE PROFILE
Shoppes At Elmway Farms
Norwood, MA

Equations Used to Calculate Average Daily Exposure (ADE) and Lifetime Average Daily Exposure (LADE)

**EXPOSURE PATHWAY: Inhalation of Vapors in Indoor Air**

$$ADE_{ind\text{-}air} = \frac{EPC_{air} * EF * ED * EP * C2 * C5}{AP_{nc}} \quad \text{Equation 1}$$

$$LADE_{ind\text{-}air} = \frac{EPC_{air} * EF * ED * EP * C2}{AP_{c}} \quad \text{Equation 2}$$

| Parameter | Definition | Units | Receptor-Specific Values (ages >18 years) | Rationale/Reference |
|---|---|---|---|---|
| $ADE_{ind\text{-}air}$ | Average Daily Exposure | $mg/m^3$ | Calculated | Equation 1 |
| $LADE_{ind\text{-}air}$ | Lifetime Average Daily Exposure | $\mu g/m^3$ | Calculated | Equation 2 |
| $EPC_{air}$ | Exposure Point Concentration in Air | $\mu g/m^3$ | TABLE B-3 | modeled from sub-slab soil gas concentrations |
| EF | Exposure Frequency | events/year | 250 | Five days per week for 50 weeks (assuming 2 weeks vacation), USEPA (2002) default assumption for indoor worker. |
| ED | Exposure Duration | hours/event | 8 | USEPA (2009) default assumption for occupational receptor; MassDEP (2008) default assumption. |
| EP | Exposure Period | years | 25 | USEPA (2009) proposed longest exposure period for occupational receptor. |
| C2 | conversion factor for units | days/hr | 0.0417 | Constant |
| C5 | conversion factor for units | mg/µg | 0.001 | Constant |
| $AP_{nc}$ | Averaging Period, non-cancer | days | 9,125 | equals EP * 365 days/year |
| $AP_c$ | Averaging Period, cancer | days | 25,550 | equals average lifetime, 70 years * 365 days/year, USEPA (2002) |

References:

USEPA, 2002. Supplemental Guidance For Developing Soil Screening Levels For Superfund Sites. December.
MassDEP, 2008. Development of MCP Risk-Based Levels for Soil and Groundwater.
USEPA, 2009. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment).

**TABLE B-5**
SUMMARY OF DOSE-RESPONSE INFORMATION - NONCARCINOGENIC EFFECTS - INHALATION
Shoppes At Elmway Farms
Norwood, MA

| COC | Inhalation Chronic Reference Concentration ($mg/m^3$) | | Chronic Inhalation RfC UF x MF | Target Organ/System | Critical Effect | Study Animal | Study Method |
|---|---|---|---|---|---|---|---|
| Trichloroethene | 0.01 | e | | CNS, liver, endocrine systems | critical effects | human, mice rats | inhalation |
| Vinyl Chloride | 0.1 | a | 30 x 1 | liver | liver cell polymorphism | rat | feeding study |

a. US EPA Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS, February, 2010.
e. NYSDOH (2006) recommended criterion for evaluating the risks of non-carcinogenic effects from chronic exposure to TCE in ambient air. On-line resources available at http://www.nyhealth.gov/environmental/chemicals/trichloroethene/docs/cd_tce.pdf.

Notes:
1. A blank space indicates no data found.
Abbreviations:
CNS = Central nervous system; COC = Constituent of Concern; MF = Modifying Factor; RfC = Reference Concentration; UF = Uncertainty Factor.

**TABLE B-6**
SUMMARY OF DOSE-RESPONSE INFORMATION - CARCINOGENIC EFFECTS
Shoppes At Elmway Farms
Norwood, MA

| COC | Weight of Evidence Class | | Inhalation Unit Risk $(\mu g/m^3)^{-1}$ | | Target Organ/System (Inhalation) | Study Animal | Study Method |
|---|---|---|---|---|---|---|---|
| Trichloroethene | B1 | c | 2.0E-6 | b | liver, lung, immune system | Mice | inhalation |
| Vinyl Chloride | A | a | 8.8E-6 | a | liver | rat | inhalation |

Notes:
a. US EPA Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS, February, 2010.
b. California Environmental Protection Agency. Air Toxics Hot Spot Program Risk Assessment Guidelines. On-line resources available at http://www.oehha.ca.gov/air/hot_spots/pdf/TSDlookup2002.pdf
c. United States Environmental Protection Agency. 2001. Trichloroethylene Health Risk Assessment: Synthesis and Characterization.

1. Weight of evidence classification:
   - A: Human carcinogen
   - B: Probable human carcinogen
   - B1: Limited evidence of carcinogenicity in humans from epidemiological studies
   - B2: Sufficient evidence of carcinogenicity in animals, inadequate evidence in humans

2. Inhalation unit risk is defined as the risk per concentration unit in air, e.g. risk per $\mu g/m^3$.

Abbreviations:
COC = constituent of concern

**TABLE B-7**
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES
FOR INHALATION OF INDOOR AIR IN RETAIL A BUILDING
Shoppes At Elmway Farms
Norwood, MA

Commercial/Industrial Worker
CHRONIC NON-CANCER EFFECTS

| See TABLE B-4 for Exposure Variables and Rationale and TABLE B-3 for EPC Descriptions | **Inhalation of Indoor Air** $ADE_{ind\text{-}air} = \frac{EPC_{ind\text{-}air} * EF * ED * EP * C2 * C5}{AP_{nc}}$ $HQ_{ind\text{-}air} = \frac{ADE_{ind\text{-}air}}{RfC}$ | | $HI_{ind\text{-}air} = \Sigma HQ_{ind\text{-}air}$ |
|---|---|---|---|
| COC | $EPC_{ind\text{-}air}$ EPC2 ($\mu g/m^3$) | $ADE_{ind\text{-}air}$ ($mg/m^3$) | RfC Chronic ($mg/m^3$) | $HQ_{ind\text{-}air}$ (unitless) |
| Trichloroethene | 1.3E+01 | 3.0E-03 | 1.0E-02 | 3.0E-01 |
| Vinyl Chloride | 2.5E+00 | 5.7E-04 | 1.0E-01 | 5.7E-03 |
| | | | $HI_{ind\text{-}air}$: | **3E-01** |

COC = Constituent of Concern

**TABLE B-8**

CALCULATION OF LIFETIME AVERAGE DAILY EXPOSURES AND RISK ESTIMATES
FOR INHALATION OF INDOOR AIR IN RETAIL A BUILDING

Shoppes At Elmway Farms

Norwood, MA

Commercial/Industrial Worker
CANCER EFFECTS

| See TABLE B-4 for Exposure Variables and Rationale and TABLE B-3 for EPC Descriptions | **Inhalation of Indoor Air**<br>$LADE_{ind\text{-}air} = \frac{EPC_{ind\text{-}air} * EF * ED * EP * C2}{AP_c}$<br>$ELCR_{ind\text{-}air} = LADE_{ind\text{-}air} * UR$ | | Total $ELCR_{ind\text{-}air} = \sum ELCR_{ind\text{-}air}$ |
|---|---|---|---|
| COC | $EPC_{ind\text{-}air}$ EPC2 ($\mu g/m^3$) | $LADE_{ind\text{-}air}$ ($\mu g/m^3$) | UR ($\mu g/m^3$)$^{-1}$ | $ELCR_{ind\text{-}air}$ (unitless) |
| Trichloroethene | 1.3E+01 | 1.1E+00 | 2.0E-06 | 2.2E-06 |
| Vinyl Chloride | 2.5E+00 | 2.0E-01 | 8.8E-06 | 1.8E-06 |
| | | | Total $ELCR_{ind\text{-}air}$: | **4E-06** |

COC = Constituent of Concern

**TABLE B-9**

CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES
FOR INHALATION OF INDOOR AIR IN RETAIL B BUILDING

Shoppes At Elmway Farms

Norwood, MA

Commercial/Industrial Worker
CHRONIC NON-CANCER EFFECTS

| See TABLE B-4 for Exposure Variables and Rationale and TABLE B-3 for EPC Descriptions | **Inhalation of Indoor Air** $ADE_{ind\text{-}air} = \frac{EPC_{ind\text{-}air} * EF * ED * EP * C2 * C5}{AP_{nc}}$ $HQ_{ind\text{-}air} = \frac{ADE_{ind\text{-}air}}{RfC}$ | | $HI_{ind\text{-}air} = \Sigma HQ_{ind\text{-}air}$ |
|---|---|---|---|
| COC | $EPC_{ind\text{-}air}$ EPC4 ($\mu g/m^3$) | $ADE_{ind\text{-}air}$ ($mg/m^3$) | RfC Chronic ($mg/m^3$) | $HQ_{ind\text{-}air}$ (unitless) |
| Trichloroethene | 7.4E+00 | 1.7E-03 | 1.0E-02 | 1.7E-01 |
| Vinyl Chloride | 2.1E+00 | 4.8E-04 | 1.0E-01 | 4.8E-03 |
| | | | $HI_{ind\text{-}air}$: | **2E-01** |

COC = Constituent of Concern

**TABLE B-10**

CALCULATION OF LIFETIME AVERAGE DAILY EXPOSURES AND RISK ESTIMATES
FOR INHALATION OF INDOOR AIR IN RETAIL B BUILDING

Shoppes At Elmway Farms

Norwood, MA

Commercial/Industrial Worker
CANCER EFFECTS

| See TABLE B-4 for Exposure Variables and Rationale and TABLE B-3 for EPC Descriptions | **Inhalation of Indoor Air**<br>$LADE_{ind\text{-}air} = \frac{EPC_{ind\text{-}air} * EF * ED * EP * C2}{AP_c}$<br>$ELCR_{ind\text{-}air} = LADE_{ind\text{-}air} * UR$ | | Total $ELCR_{ind\text{-}air} = \sum ELCR_{ind\text{-}air}$ |
|---|---|---|---|
| COC | $EPC_{ind\text{-}air}$ EPC4 ($\mu g/m^3$) | $LADE_{ind\text{-}air}$ ($\mu g/m^3$) | UR ($\mu g/m^3)^{-1}$ | $ELCR_{ind\text{-}air}$ (unitless) |
| Trichloroethene | 7.4E+00 | 6.0E-01 | 2.0E-06 | 1.2E-06 |
| Vinyl Chloride | 2.1E+00 | 1.7E-01 | 8.8E-06 | 1.5E-06 |
| | | | Total $ELCR_{ind\text{-}air}$: | **3E-06** |

COC = Constituent of Concern

**TABLE B-11**
SUMMARY OF TOTAL HAZARD INDICES AND RISK ESTIMATES
Shoppes At Elmway Farms
Norwood, MA

| Building | Receptor | Exposure Media/Route | Non-Cancer Hazard Index | | | Excess Lifetime Cancer Risk | |
|---|---|---|---|---|---|---|---|
| | | | | Chronic HI | Driver | Estimate | Driver |
| Retail Building A | RECEPTOR: Commercial / Industrial Workers | Inhalation of Indoor Air | Subtotal: | 0.3 | Trichloroethene | 4E-06 | Trichloroethene |
| | | **Total for RECEPTOR: Commercial / Industrial Workers:** | | **0.3** | | **4E-06** | |
| | | **USEPA Risk Limits:** | | **1** | | **1E-6 ~ 1E-4** | |
| | | **Exceed USEPA Risk Limits?** | | **NO** | | **NO** | |
| Retail Building B | RECEPTOR: Commercial / Industrial Workers | Inhalation of Indoor Air | Subtotal: | 0.2 | Trichloroethene | 3E-06 | Vinyl Chloride |
| | | **Total for RECEPTOR: Commercial / Industrial Workers:** | | **0.2** | | **3E-06** | |
| | | **USEPA Risk Limits:** | | **1** | | **1E-6 ~ 1E-4** | |
| | | **Exceed USEPA Risk Limits?** | | **NO** | | **NO** | |

Abbreviations:
USEPA = United States Environmental Protection Agency

# ATTACHMENT I

## RISK CHARACTERIZATION LIMITATIONS

1. The interpretations and conclusions presented in this report were based solely upon the services described herein, and not on scientific tasks or procedures beyond the scope of described services. The work described in this report was carried out in accordance with the agreed upon Terms and Conditions.

2. GZA's risk characterization was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time. The findings of the risk characterization are dependent on numerous assumptions and uncertainties inherent in the risk assessment process. Sources of uncertainty may include the description of site conditions and the nature and extent of chemical distribution and the use of toxicity information. Consequently, the findings of the risk characterization are not an absolute characterization of actual risks, but rather serve to highlight potential sources of risk at the site. Although the range of uncertainties has not been quantified, the use of conservative assumptions and parameters throughout the assessment would be expected to err on the side of protection of human health and the environment.

3. The analysis and conclusions submitted in this report are based upon chemical data collected by GZA and other consultants during investigations of the site.

4. This report has been prepared for the exclusive use of JDN Realty, LLC (Developers Diversified Realty), for specific application to the Shoppes at Elmway Farms Site in Norwood, Massachusetts, in accordance with generally accepted risk assessment practices. No other warranty, express or implied, is made.